DOCUMENT RESUME

ED 310 611	EC 221 021

AUTHOR	Sandhu, Jim Singh; Richardson, Steve
TITLE	Concerned Technology 1989: Electronic Aids for People with Special Needs.
INSTITUTION	Newcastle upon Tyne Polytechnic (England).
REPORT NO	ISBN-0-906721-41-5
PUB DATE	Oct 88
NOTE	443p.; Prepared by the Handicapped Persons Research Unit. Additional funding was provided from The Grand Metropolitan Trust, Imperial Chemical Industries, Deron, and Toys for the Handicapped.
AVAILABLE FROM	Handicapped Persons Research Unit, Newcastle Polytechnic, Newcastle upon Tyne, NE7 7TW England (15 pounds plus 7 pounds postage and handling outside the United Kingdom).
PUB TYPE	Reference Materials - General (130)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Artificial Intelligence; *Assistive Devices (for Disabled); Communication Aids (for Disabled); Compliance (Legal); Computer Software; *Disabilities; *Electronic Equipment; Federal Legislation; Input Output Devices; Mobility Aids; *Rehabilitation; Resources; Trend Analysis; *Vocational Rehabilitation
IDENTIFIERS	*Rehabilitation Act Amendments 1986 (Section 508)

ABSTRACT

In light of the implementation of Section 508 of the Rehabilitation Amendments Act of 1986 requiring that all electronic equipment purchased by the U.S. Government be accesible to the handicapped. this directory lists several hundred electronic aids for the disabled. The introduction humorously reviews the state of the art in software, artificial intelligence, speech recognition, scanners, robotics, and screens, as related to public policy. In the directory section, many of the devices are pictured. Entries usually include the name, a description, price (in British pounds or U.S. dollars) options, and the supplier. Devices are listed under the following categories: alternative input and general systems, communication aids, multi-purpose speech synthesizers, visual impairment, hearing impairment, speech impairment, health and therapy, mobility, telephone equipment, environmental control, alarm systems, switches, and miscellaneous. Also provided are a bibliography on education, training, and employment; an index of equipment; an index of switches; and a directory of suppliers. An appendix lists databases and publications of the Handicapped Persons Research Unit. (DB)

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Electronic aids for people with special needs

Sandhu
Richardson

Additional funding from:

The Grand Metropolitan Trust
Imperial Chemical Industries
Deron
Toys for the Handicapped

ISBN 0-906721-41-5

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NEWCASTLE UPON TYNE POLYTECHNIC

October 1988

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INTRODUCTION

Nineteen eighty-eight was the year when an elderly and confused President called his likely successor an "invalid" in the most perjorative and demeaning sense. Paradoxically he did this barely two months from a stupendous event that will put his country morally and technologically in the forefront of special needs developments. This single event will have major repercussions for disabled people throughout the world. And for many years to come. In fact a step so farsighted, imaginative and courageous that it would be totally unthinkable in the present climate in the UK. Fortunately, the event would force British manufacturers to conform to certain standards if they wished to export to the States. And that's a positive rub. Like eliminating apartheid by tanning everyone green.

Section 508 of the Rehabilitation Amendments Act 1986

From 1st October 1988 the above Act will force the world's biggest customer for electronic equipment to follow certain standards. All US government departments will only be allowed to purchase electronic equipment which are completely accessible to disabled people. Historically manufacturers have mostly treated disabled people as a separate market which usually amounts to modifying the product at a much later stage. In ergonomic and cost terms this approach usually results in an inadequate and unaffordable product. From October 1988, however, manufacturers have to consider special needs at the drawing board stage. We believe this general approach could be applied to a much wider range of products, services and the built environment, with benefits for everyone.

But what does it all mean in tangible terms? It means that the (American) National Institute on Disability and Rehabilitation Research (NIDRR) has been designated as the main agency with the remit of evolving computer accessibility guidelines. The main thrust of NIDRR and industry representatives who work closely is on "performance not ports". A system should be able to provide a variety of access routes for any task.

This approach is best expressed by the concept of 'transparency'. A transparent access system is one that is available when needed but is not otherwise apparent in any way. In practical terms this Directory is full of examples or attributes that could jointly make up a transparent system. The two main problems would be system compatibility and the fact that no one system could possibly provide accessibility to the full range of disabilities.

The latter has been generally recognised ever since our ancesters tried to use a forked branch of a tree as a crutch - it had to be cut or adjusted for height for each individual. As for the former events are moving rapidly towards compatibility from one country to another and between systems - unlike the utter chaos of the early eighties. We predict the USA's Rehabilitations Amendments Act will make the Japanese and all other serious manufacturers conform to the required standards. The need to make money would no doubt remain the driving force. As described elsewhere in this Introduction, the Japanese do not need to rush to their drawing boards. They have been at it far longer than us and are therefore closer to meeting the requirements of the Act.

What the above exercise could produce is a computer modified for transparent access which sits quietly until the need arises, then transforms itself utilising speech output, large print screens, single switch keyboard emulation or speech control while still permitting standard keyboard/screen access.

The following pages attempt to give some idea of the state of the art and its potential. The account is by no means comprehensive. Some areas are deliberatly better described because these are generally held to be important now and in the future. A number of developments appear merely as bit players (e.g. Oddley Sods) in the vast canvas of special needs. In many cases the precise benefits to special needs are not spelt out to avoid repetition. The benefits should become obvious through association later on. For instance the role of speed and memory size becomes clearer in the section on Speech Recognition and Scanners.

Views expressed in this section in no way reflect those of our sponsors. Views on government policy and the Weltanschauung of civil servants are if anything underplayed. A more detailed critique of IT developments and government policy will be published later in the year.

Although we have endeavoured to present the information contained in the Directory as accurately as possible we should not be held responsible for any inaccuracies that might occur. Please note that the prices quoted are only a guide. When ordering from the United States you can assume parity between Pound and Dollar. Please double check on compatibility before ordering.

Software and Infomania

Means of access to IT systems and software developments are the key to the use of New Technology by people with special needs. Although this Directory has many examples of both, software really needs a separate publication in order to obtain a comprehensive picture. Sadly the publication would be out of date by the time it emerged from the printers, such is the pace of developments. We know this from hard experience. Our database of software information (BARDSOFT) has to be completely checked and rechecked every four months to keep it up-to-date.

Historically developments have been uneven mainly because most software packages started off for 'mainstream' use. A few were then modified for use by disabled people, and it shows. Only a small proportion were specifically developed for them. To some extent this approach to software developments still applies in 1989 despite the fact that technological advances now allow disabled people fuller access to many ordinary programs. There are many examples of such systems in this directory.

At a general level if we examine our BARDSOFT coding/descriptor structure we find a considerable lack of appropriate packages for employment and training but above all for assessment and evaluation purposes. Given the power and versatility of IT equipment this is quite an amazing deficit as compared with programs on language, numeracy and recreation. (As far as special needs software is concerned we do not draw a distinction between 'education' and 'training'.)

In 1989 there are as yet no suitable programs that utilise the potential of interactive video or CD ROM. This will change as hinted elsewhere - the lead once again will come from the States. At a fairly mundane but practical level there have been wide-ranging One Key Series commercial programs available. A firm called Power Up sells One-Key Calculator, One-Key Timekeeper, One-Key Memo Pad, One-Key DOS, etc. Simple one-key programs have also been available in the education sector for a number of years.

The goodies of Artificial Intelligence (AI) promised as long ago as six or seven years ago (which is like fifty years in terms of normal time-scale) have not materialised in special needs applications or elsewhere. What we do have are a few fairly 'human' intensive 'knowledge-based' programs that actually work rather than merely promise. One example called AUI - for Adaptive User Interface, is a program that learns about the user as he or she learns to work a computer system. The computer presents information in terms that the particular user can understand; if the user keeps selecting "why?" from the menu, the computer begins to present procedures in a simpler way. The program will not explain anything in terms it does not believe that a user can understand.
The Cambridge-based company Logica which developed

the AUI program claims it could build its models of the user's goals, knowledge, skills and even moods during training sessions (in this case tied up with the Columbus flights). Logica is presently working on developments of an interface which would include speech synthesis and recognition, including picture references from optical discs. Users may work with the machine via sketches, graphics, keyboards or devices that recognise gestures such as pointing.

Software and Cyberphobia

We may not have resolved the problem of long-term harmful effects of VDU radiation on people but a Californian firm believes it has a solution for sore eyes. It comes in the form of a software package costing about $239. Developed in co-operation with an eye-specialist the memory resident program takes the user through a series of interactive exercises designed to build up abilities that reduce eye-strain. Apparently the program can also draw users' attention to their eye defects.

Anyone rich enough to order a complete printout of our BARDSOFT database will not find Dr. Michael Fordyce's "Happiness Assessment Program" amongst its 2550 A4 pages of information. As leftover Budhists we feel 'happiness' is a non-starter. Our hell would be a program that gave us a 'happiness score' every hour of the day unasked. Imagine a 'happiness watch' or 'happiness-door' announcing your score every time you leave or enter a room. Think of commuters on the London Underground having their score announced simultaneously by speech synthesised 'happiness watches'. Nevertheless, we feel it is worth examining Fordyce's claims.

Instead of dishing out the score to the happy, contented and balanced subjects the program passes the buck onto their therapists and counsellors. Ten years of research has led Fordyce to conclude that "the nature of happiness is far more stable, understandable and universal than most people have ever suspected." His program measures the factors that contribute to long-term happiness, such as personality and attitudes. The good doctor even recommends a self-study course for making yourself happier. Give us the coronach any day.

For a while we thought nothing could match the bizarre and absurdly sanguine goals of the happiness programme - till we came across a package so extra-ordinarily unbelievable that it made us swallow our stottie. Can you imagine an IBM-PC that does not exist? No, this is not an existential joke, a Zen koan or something said by Descartes.

A British company called Insignia Solutions recently developed a product called Soft PC which is purely a software program that emulates the IBM Basic Input/Output System (BIOS), the Intel 80 series instruction set, and all other hardware which goes into an IBM XT. In other words the product contains no hardware, no solid components, no metal, plastic or silicon. Yet, when it is run on another computer it creates a window on the display that looks like an IBM monitor. This monitor behaves exactly as an IBM-XT would when connected to an XT base unit, power supply, peripherals, etc.

Incredibly, what the above seems to suggest is that you do not really need IBM Hardware or clones to operate as an IBM-PC. The Soft PC is more economical to manufacture, install, document and maintain than any other standard PC. Maybe here lies a solution to ultimate compatibility. No doubt much more work needs to be put in before it becomes a practical solution. And there are the enormous problems of copyright to be sorted out.

Loadsa Capacity-Soupachips

A leading American firm called International Data Corporation has shown that it costs over $100,000 for each mip (millions of instructions per second) of performance by a mainframe computer. The same performance is obtainable using micros for $1000 or less. The firm predicts a new era in information processing based on microcomputers. This bodes well for people with special needs as access to micros is becoming cheaper and easier.

One incredible example of a recently elevated supermicro is the DELL Microcomputer which according to the prestigious BYTE magazine is one of the fastest 386 chip systems on the market with 320 Megabytes of memory. Even more astonishing is its current price - £2,300. One good example of miniaturisation is another American 386-based fast micro called Flexinode with 50 MB, hard disc which measures just 4.5 x 7 x 15 inches. This kind of power and memory is also available in a number of laptops. One new laptop goes up to 150 MBs.

Can you imagine carrying 600,000 A4, single space, typewritten pages or 4266 floppy discs in your pocket! Cross the heart - its true. A firm called Ambar has produced a family of write-once optical storage subsystems with 1600 MB capacity for IBM-PCs. The information is stored on an optical compact disc or CD-ROM. Another recent announcement has a claimed capacity of one Terabyte (one million MBs). Developed by Standard Platforms it consists of an integrated juke box which supports 20 CD-Roms. The trouble with such a system is that you cannot update or modify data. However, an American company called Maxtor has come up with the solution recently. It has introduced a range of erasable optical disc drives. The capacity of these vary from 160 MBs to 1000 MB and their seek times are remarkably fast.

Another new implausible step in miniaturisation is only at the developmental stage. Think of a large super-computer shrunk to the dimensions of a sugar cube but packed with billions of integrated electronic components, each the size of a molecule. Molecular electronics is based on persuading organic molecules to behave as electrical conductors and semiconductors. The team from the University of Minnesota is presently perfecting the technique of verifying their molecular wires, using electron microscopes.

Much closer to ground is a new cheap memory chip that can be erased and reprogrammed much more quickly than conventional chips. These chips could open up a range of new applications for solid-state memory. For example, chips inside modems or telephones could be modified automatically down the line; cheap message indicators for the blind and teleshopping terminals could be updated once a week without recourse to Prestel or some complicated database.

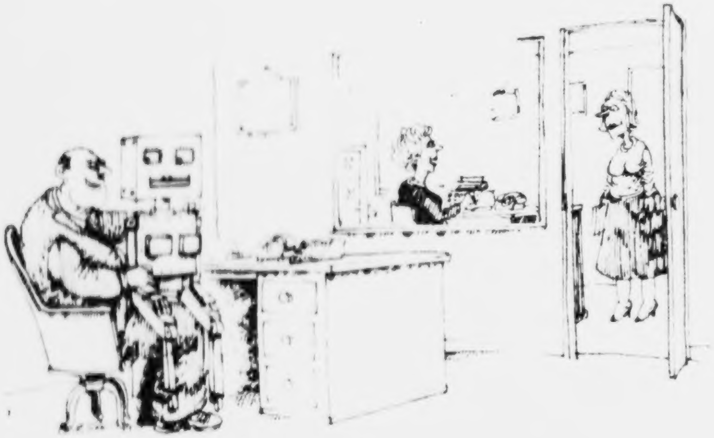
Fairly recently separate teams from Rochester University and IBM's Research Centre in Yorktown Heights have demonstrated that high-temperature super-conductors can transmit ultrafast pulses of electricity. These have been calculated to be much faster than in optical fibres. Moreover, the pulses travel smoothly without distorting the current. The potential uses, however, are very much tied up with short-distance links of a few millimeters within computers. The major gain is computing power and speed because so many bursts (measured in trillionths of a second) travel through the superconductor per second the wires have the capacity to carry many more messages than any present day cables or circuits.

Artificial Intelligence - IT or ET

Artificial Intelligence (A1) is central to many of the more interesting developments taking place. At its simplest the term refers to the possibility of creating genuinely "intelligent machines." It is a quagmire of a topic for discussion. At its hub are the complex fields of cognitive science, philosophy, semantics, neuro-biology. etc. It is also a messy hub of claim and counter claim, of doubting Thomases and the gift-bearers of the New Jerusalem.

The first shot for the former was fired more than 2500 years ago by the Chinese philosopher Seng-Ts'an who wrote: "If you work on your mind with your mind, how can you avoid an immense confusion." Fortunately, despite the astonishing complexity and variety of phenomena to be explained when discussing 'mind' or 'cognition' humankind has persisted regardless of Seng'Ts'an. This has usually been done by adapting some simplifying, unifying metaphor (For example, in Indian philosophy 'mind' was compared to the surface of a pond). Over the centuries, people have always used models culled from the dominant technology of the day to explain the mind. As Johnson-Laird (The Computer and the Mind, Fontana) points out, this is because anything that counts as an explanation must spell out what we do not understand in terms of what we do understand.

Nearer home to IT the American philosopher John Searle objects to the idea that a digital computer could ever be said to "think" or "understand". Searle believes it is difficult to replicate in machine form the complex bio-chemistry of the brain which is central to the possibility of thought.

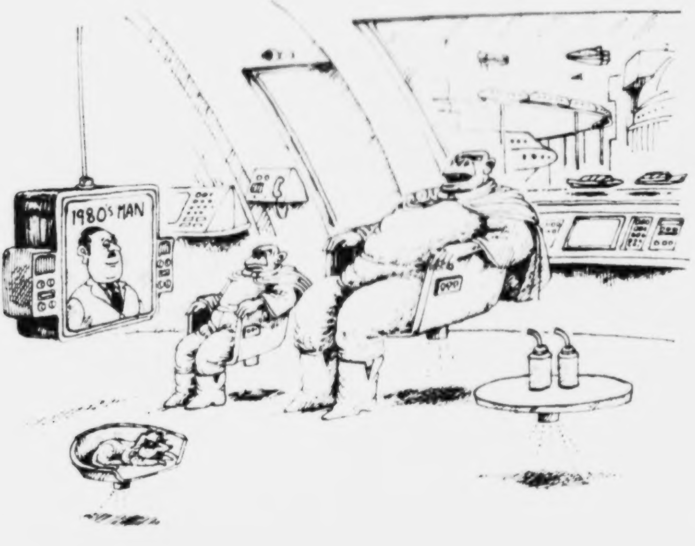


'I'm all for computers, they do all the dull, boring jobs for you.'

(Honeysett)

The gift-bearers on the other hand not only talk in terms of 'computer enhanced individuality' but also claim that we would be lucky if the intelligent computers of tomorrow were prepared to keep us on as pets (pace Honeysett). Frankly, this is all futurological froth. It takes little effort to realise that it takes more than a set of equations to model the brain. How does anyone model 'intuition' for starters?

At one level what the whizzkids have succeeded in doing is to mimic one important component of the human brain - the way it uses networks of neurons to process information. A complex task to do with movement or vision for which a neuronal network might take 100 processing steps would take one electronic computer billions of steps. Although research is still at an early stage it is clear that neural computers will initially be used in commerce & further modelling of the brain. Some computer scientists think neural computers will dictate the future of computing.



'It's nature's way of adapting, son.
Now that computers do all our brainwork we don't need such big heads.'
(Honeysett)

Whilst most of the neural computers are confined to laboratories, Japan's largest computer producer, Fujitsu hopes to bring out a prototype within the next few years. In 1988 the company announced it had simulated a computer based on the layout of the human brain which could learn from experience, infer, judge, and draw its own conclusions about changing situations. No wonder the Japanese Government is considering investing £220 million to egg its computer developers on. The Japanese are not alone, of course, because similar developments are taking place in Europe and the United States.

Following close behind the potential of neural computing is parallel processing. As it is based on a relatively straight forward technology it is much more advanced in terms of applications. Unlike the ordinary computer which has one processor and can therefore perform one activity at a time the parallel computer contains many processors working in parallel. In theory there is no limit to the number of processors and therefore the speed at which a single computer can operate. The more successful exemplars employ the transputer manufactured by Inmos, a subsidiary of our main sponsor Thorn-EMI. The transputer is virtually a computer on a single chip which can be linked in networks of various shapes and sizes.

A new IBM group, Highly Parallel Systems, is building a supercomputer (GF11) with 576 processors that will all execute the same instruction at the same time, but on different data. The GF11 will be used to solve problems at the core of quantum physics. One of the fastest super-computers in the world, the Cray I would require 100 years to compute the masses of subatomic particles taking part in a nuclear reaction. The GF11 would zip through these calculations in under one year.

The benefits of such a technofeast of goodies to special needs are summarised later.

Far below these dizzy heights are software based systems that are both practical and relatively inexpensive. These are called expert systems. Pioneered by Professor Donald Michie at Edinburgh University they utilise rule induction to enable the computer to create new knowledge rather than merely manipulating existing knowledge. So instead of getting say a medical expert's knowledge into the computer they are given examples and asked to outline what would happen in each situation. Given hundreds or thousands of examples the package can work out a rule through logical induction. Sadly, UKanian powers that be showed no interest in Michie's work. Instead the Finns and Swedes bought the idea and are reaping a rich harvest.

Speech Recognition - A Thousand Horse-Power Words

Last year IBM demonstrated a 20,000 word speech recognition system running on a PC. The system uses two reference models, one which is built up by the speaker in a "training" session, and another based on analysing 2.5 million words of IBM office correspondence.

The analysis which formed the hub of the exercise was geared to working out the probability that a given word will appear in a particular context. The result of this effort is a system called Tangora which can produce typescript of spoken language with 95 per cent accuracy. Tangora is intended to fit into IBM's personal computer range.

So, does it mean the science fiction cliche of the friendly HAL from 2001 could become real sooner than anticipated? Sadly, the answer is negative. We are a long way off from Sinbad's electronic genie who would not only carry out complex tasks at our command but also have a 'meaningful' conversation with us when we are lonely. Although the 'super-slave' may be a long way off there have been a glut of lesser developments as evidenced by various entries in this Directory.

However, in order to obtain a more comprehensive picture it is worth looking at some other developments which do not figure in this publication.

Various British banks notably National Westminster, Lloyds, and the Royal Bank of Scotland have trial facilities at a few selected branches which recognise a customer over the phone and respond to her request. Various Japanese banks have been performing this service for much longer. Indeed, one Japanese firm (NEC) has developed a system that not only recognises connected speech - unlike word-by-word recognition but it also translates between Japanese, English and Spanish. British Telecom have been announcing a similar type of system for over a year. You speak in one language at one end of a telephone and be heard in another language at the other end. One direct practical application of speech recognition is a voice operated switchboard developed a few years ago by Siemens in Germany. This company has also demonstrated a voice controlled car which has tremendous potential for severely disabled people.

Another system which is an advance on the above has been available from IBM for about two years. The package is called Personal Computer Voice Communications Option. Functions that once stretched the limits of mainframe computer technology - speech recognition, speech synthesis, variable speed data communication through modem emulation; message recording and playback; telephone management and line monitoring can now be added to any PC thanks to the package. You can also create vocabularies that allow you to talk to your micro - and it will respond. Sadly, not anywhere near the sci-fi level of HAL. But the package will dial a telephone number for you at your command.

The majority of systems currently in use are speaker-dependent - the system has to be programmed or "trained" to recognise the speaker. Speaker-independent systems do not require training. In other words there is no restriction on who the speaker is. It has been estimated that we are ten to thirty years away from systems that recognise spontaneous, unrestricted speech. No doubt this estimate could change with the advent of cheaper parallel-processing supercomputers.

What does speech recognition mean in practical terms? Aside from a number of other systems described later the answer is best exemplified by a package called Cherry's Voice Scribe. It comes on a PC expansion card, headset, software and documentation for £895 plus VAT. The Voice Scribe recognises 1000 words with a claimed 99.3 per cent accuracy. It is particularly suitable for people unable to use a conventional keyboard. They can use it to operate MS DOS, Lotus 1-2-3, Multiplan, DBase III, Display-write - packages for word-processing, operating/creating a database for accounting, windowing, etc. All this with spoken commands!!

Speech recognition also holds infinite possibilities for communication with deaf people using existing telecommunication systems; for the control of domestic and other equipment, and in the expanding field of robotics.

Scanning the Scanners

Two years ago there were very few Optical Character Recognition (OCR) devices around. Now we estimate there are over 100 different makes around the world ranging from cheap hand-held ones to sophisticated desk top versions. A few of these are described later in the Directory. The best ones are quite remarkable and can be used with most popular word-processing systems. These permit automatic entry of rough draft documents into the computer's memory. The documents could be in any of the eight most popular type styles.

The major benefitters of text scanners are blind people. Text can be input to the computer and then displayed on screen or printed out in large type face. It can also be read out through a speech synthesiser.

One example which highlights the full potential of OCRs is a system called VOICE marketed by a British company called Microphax. Costing about £15,000 VOICE can store 40,000 documents on one five-and-a- quarter inch optical disk - cheques, photographs, clippings, handwritten notes, drawings, letters, and ordinary printed matter. These are stored in the form of a database and can be retrieved easily either for viewing on a high resolution screen or for printing out or to be transmitted long distances in a similar way to telefax. The additional cost of storing another 40,000 documents is only £138, the price of an 800 Megabyte optical disk.

Applications for systems such as VOICE include industry, commerce, government offices, major institutions, hospitals, libraries, charities, voluntary organisations, etc. Although the potential for opening up employment possibilities is clearly obvious in these sectors we believe progress will be dilatory in Britain.

Robotics

The promises of robotics have not matched up to practical reality in special needs. The much heralded move from the use of trained capuchin monkeys to look after the daily needs of severely physically disabled people to the use of wheelchair mounted robotic arms has remained a bit of a pipe dream. Whatever the reasons (lack of finance is definitely one) the potential is still there waiting to be translated. Mainstream developments provide a clue as to what is possible.

As usual Japanese researchers hold centre stage. At Waseda University they have developed a robot with four moveable rods each bearing pressure sensors. These are so sensitive that they can distinguish cancerous tissue from healthy tissue by its stiffness as they glide over a skin surface. The robot was primarily developed to detect breast tumours because even specialists have difficulty locating tumours that are less than five millimetres in diameter. This super-feeler of a robot can apparently detect tumours as small as three millimetres across.

Perhaps not as sensitive as the above tumour seeker but certainly more versatile is Dexter, a robot hand. Dexter's main aim is to help deaf and, more significantly deaf/blind people to communicate. Developed at Stanford University the system consists of an electronic glove and a mechanical hand. Although developed separately the two can be combined so that the glove sends messages and the hand receives them. The messages can also be spoken through a speech synthesiser. A hearing person uses a small keyboard to reply with messages displayed on a screen or on a Braille display. The Stanford team is presently developing a system which can use sign-languages as well as finger spelling. As the glove can also control the mechanical hand the possibilities for environmental interaction and intervention are immense.

Another relevant effort being undertaken in the States is by a firm call Transition Research which is a leader in robotics. The firm is heavily sponsored to sort out some of the most intractible problems in the field. The ultimate goal is to build a viable electronic "maid on wheels". At present Transition Research has a prototype working in a hospital carrying blood and urine samples.

The jump from the above prototype (or from the more gimmicky drink-serving robots) to robots that carry out a range of household chores, serve meals and help elderly or disabled people is still a few years off. Actions that human beings take for granted, such as tying shoelaces, picking up a sponge cake, or picking their noses require a great deal of research into improved sensors, navigation, guidance and control. For example, the sponge cake would create a special problem for a robot because it is not firm and does not have tight tolerances. Sensor reliability becomes a major issue here - moreso in the field of special needs in terms of the range of activities to be catered for. Even simple variables as surface texture can provide misleading information to a sensor. For example, infra red beams bounce back from a light, flat surface far more quickly than from a dark, rough surface which diffuses the signal. This simple fact could easily confuse many present day robots and send them hurtling to the nearest shrink.

Showpiece robots that have overcome some of the above problems exist (some even play table tennis). The majority of these are geared to industrial applications and they are incredibly expensive. Industrial applications is also the main thrust of the newly created Advanced Robot Research Centre at Salford University. There is strong evidence that robots are unlikely to plot their escape from factory boredom to the varying thrills of say wheelchair perches for many years to come. The first robotic applications on a wide scale in special needs will happen in the States in about four to five years. For the time being the most advanced work on joystick controlled wheelchair mounted arm is being undertaken by the Institute for Rehabilitation Research, Netherlands. Another organisation to watch out for is the excellent Neil Squire Foundation, Canada and its MOM (Manipulative Obedient Machine) robot.

The pathways have already been laid recently by Eduardo Bayo from the University of California. His research will alter the jaunty 'break dancing' movements of most present day robots into movements that have a gentle flow and are better coordinated. He has achieved this by solving a complex mathematical problem which effects the control of a robot's "muscles" or motors. To initiate a movement the motors must turn in a sequence by a given amount at a given moment. At each stage each motor has to be supplied with just the right amount of power at just the right time. This method also breaks down movements of say, an arm, to consider the many frequencies each is built from. Another benefit of this approach is that robot arms can be much lighter. The possibilities of wheelchair mounted, versatile, highly flexible, and easy to control robotic arms for disabled people takes on a new meaning. Add chip-power, miniaturisation and speech recognition to these developments and you end up with a highly 'intelligent' and versatile surrogate arm that obeys your commands.

Moonbuggie Motoring

Transport and general access to the environment are at the hub of social, vocational and educational integration of disabled people. Advancements in transport and transport systems have been of great interest to us in HPRU particularly in mass public transport on which we have carried out a number of studies. Regrettably there have been few studies on using IT in private transport and the means of enhancing disabled people's access to it.

Developments in new technology could change all that.

One recent innovation by the Department of Transport is a system called the Autoguide. The system transmits road information via a computer and roadside beacons to a screen on the dashboard. Drivers inform the computer where they wish to go and the computer presents them with diagrams of how to get there. The rear view mirror tells them which way to turn.

In a rare insight into the 1990's General Motors, the largest car maker in the world recently revealed a system called HUD or 'Head-Up'. The system emulates fighter aircraft instrumentation, so-called because the driver keeps his or her head up even when checking travelling speed, indicators, low-fuel, etc., instead of constantly glancing down.

The 'head-up' screen display is already available in a production car sold in the US.

Other cars available are equipped with a voice activation system where the radio and car telephone respond to the driver's spoken commands. Accessories such as a radar-based obstacle detection system has been developed in Germany, Japan and the States. Similar UK prototypes died through lack of financial support and through lack of understanding the special needs market.

In Germany they have developed a prototype navigational system for cars which automatically controls the chosen route of say a severely disabled person using road sensors. Other car-based systems obey voice commands so you do not have to bother about physically steering the vehicle or about the clutch, brake or accelerator.

A solution to the perennial problem of traffic jams is being developed by an international consortium of motor manufacturers. The project code-named Prometheus will enable cars to communicate with one another automatically using built-in microprocessors and radios. The communication takes place without their drivers involvement - on road conditions, on the behaviour of other vehicles and on traffic jams. The driver can also insert a preprogrammed disc containing details of the intended journey. A map of the journey is then displayed on a screen and a voice synthesiser tells the driver which direction to take at each junction.

Flat Screens Vs Flat Faces

One regular cliche of sci-fi thrillers is a large flat TV screen hanging on the wall. It summons up images or data at the press of a remote control button or part of the screen or through spoken commands. The "cliche" is no longer mere fiction but fairly close to becoming reality. The technology will provide spin-offs that would benefit disabled people.

As far as we know there is only one British developer fending off competition from abroad. Poole based Phosphor Products quote a price of around £900 for one of their twelve-inch versions. Finland's Lohja Electronics Group in partnership with Helsinki College of Technology are close to marketing a seven-inch screen which uses electroluminescence to produce a crisp flicker-free monochrome picture.

As usual the most advanced developments are taking place in the States. A firm called Planar Systems is already selling various types of flat monochrome screens. Their next major development will be full-colour displays to be made available in 1990. A spokesman for the firm estimates that by 1995 flat-screens will form fifty per cent of the current VDU market. Given all these developments it makes you wonder why manufacturers remained stuck with the bulky cathode ray tube for twenty-five years.

There are other developments alongside flat screens which will enhance their use in special needs. We already have combined TV and video sets with stereo sounds. This trend will become common place with even better sound output. Starting from late 1989 we should have a new enhanced colour system called D-MAC on existing screens with 625 lines. This is being introduced by British Satellite Broadcasting.

Several groups are exploring the use of over a 1000 lines on screens. Extra lines will produce a better picture and larger screens. A few high definition televisions (HDTV) are already available in Japan and the United States for about £5000 each. This system will improve the picture quality even more markedly. The size of screens will alter to a great extent. The present dimensional ratio of 4:3 could disappear for good and be replaced by a ratio of 16:9, resulting in 36 inch screens instead of the present maximum of 28 inches.

High amongst the benefits to disabled people will be portability - therefore, increased access. Aside from being compact, flat screens have much less glare because of their even surface. The screens would also consume much less power in operation and be much more reliable than present day VDU's. Better contrast, picture quality, colour, size, and greater range of viewing angle will benefit people with sight problems. For the hard of hearing all flat screen TVs will have built-in loop amplifiers and instantaneous sub-titling.

Fibres Shoot Satelites

For the past six or seven years fibre optic cables have held the centre stage as a major breakthrough in signal transmission. Last year a firm called GTE Laboratories in the States demonstrated it could send sixty broadcast-quality video channels down one optical cable. The previous record was twenty-four. The future possibilities for this development include multi-channel systems, including both digital and analogue signals. In practical terms this means the new system could carry fifty broadcast video channels, four high definition television channels, four switched video channels, and twenty-five digital audio, voice, and data channels. The remaining channels could carry remote meter reading for gas and electricity, and fire and security alarm services. All these could benefit handicapped people in one way or another.

Regrettably companies have billions of pounds invested in copper wire cables, therefore, replacement by fibre optics will be a gradual process. Beyond that it is the pressure exerted by market forces and organisational exigencies. Just think of how long ago it was that British Telecom (BT) promised us a system that was fast, reliable and versatile! BT was going to outdo Ma Bell and deliver sizzling hot technology into our drawing room. It would no doubt happen given time but by then all the sizzles could have oozed out of the technology.

The irony is that Britain is well advanced in the use of fibre-optic technology - around a third of the UK domestic trunk network already employs optical fibre cable systems. The main threat comes from satellite transmission systems which are equally versatile. This kind of competition can only be good news for users.

But will it? How do these developments perform in reality? The most extensive field trial of fibre optic systems has been going on in Biarritz, France since the middle of 1984. Despite subsidies and the wide-range of services offered the scheme has not had the expected fanfare uptake. There is clearly an urgent need to evaluate what went wrong in order to provide pointers for the future.

Speech Into Therapy

Thanks largely to the advent of Communication Aids Centres set up about three and a half years ago, speech therapy has come out of the Middle Ages. There are still vast gaps in provision but at least there are many more good exemplars around. Some are described in this Directory. Some like the C-Speech which analyses fricatives and the even more versatile Visipitch and Visispeech were described in our 1984 Directory. Major developments since then seem to hinge mainly on embellishments to established products. There is one main exception - not much favoured by speech therapists. And for good reasons. They do not have the infrastructure of advanced training and theory to utilise its full potential. Perhaps the technique itself is more complicated than it need be.

The technique is called electropalatography (EPG). In EPG a matrix of 62 electrodes is mounted on an acrylic palate. During use the palate is placed in a patient's mouth and linked to a computer. The way the tongue touches the palate is recorded via the electrodes and the result displayed on a screen. Unlike before when therapists could only guess what the tongue was up to EPG now allows patterns of speech to be compared and analysed. The system can also display information on airflow and the acoustic signal along with the position of the tongue.

Until recently a new acrylic palate had been needed for each patient. New methods of printing electronic circuits on thin plastic will enable more widespread use by therapists and phoneticians. As a research tool EPG obviously holds great promise.

Oddly Sods

The State University of New York at Buffalo has been working on an anatomy book with a difference. The book is in Braille and has three-dimensional images to assist blind and visually impaired students of medicine and health sciences.

You have no doubt heard about the electronic insect repeller. Now there is an electronic device called Drionic which is available on prescription in the States. It can help very heavy sweaters to keep dry despite the occasional blistering that can occur in some individuals. There go underarm deodorant shares. Undaunted a colleague maintains Drionic has a great future as most insects do not like dry skins anyway.

A company called Digihurst has developed a system called MicroEye IC for IBM micros which allows users to personalise presentations through input of images of personnel, products, logos, etc. Images from a colour video camera, a standard video recorder or any other video source can be captured by MicroEye IC. These can then be processed and modified using options in the package. The most obvious areas of use are in education, health, vocational training and training in daily living skills. As most of the images can be controlled simply through a Mouse the system opens up a range of employment possibilities for disabled people particularly in quality control, measurement, materials research, medical imaging, design, etc. Each separate use requires special software or card.

A minor but nevertheless interesting and useful development is the Sonic Rangemeter which costs only £25. It is an ultrasonic tapeless measure - simply point it over the distance you want to measure, press a button, and read off the distance in imperial or metric dimensions. You do not need additional hands to help you measure awkward distances or ceiling heights. It will be an invaluable tool for people in wheelchairs, the elderly, those with back problems, etc. Maybe in another year or so they will incorporate a speech synthesiser in it and modify it for use by blind people as an obstacle scanner.

Resus, a Dutch company offers a Braille printer capable of printing 200 lines of forty Braille characters per minute to American or European standards. The printer can be operated as a complete Braille terminal for computer use by reading computer input and output directly from Braille. The printer which can handle varying paper widths can also be used for the production of Braille books, magazines, or other material from punched tape, magnetic tape cassette, or floppy disk.

Our Concerned Technology Directory (compiled 1983) contained a description of one of the first talking watches for blind people. In the intervening years we have seen Japanese wristwatch calculators, address files, diaries, televisions and wristwatch computers. Currently, Plessey is working on a James Bondish wristwatch which will also be a radiopager. It will pick up and display messages like "ring home", broadcast by FM radio stations (in Britain change in legislation will be required). The watch will bleep when a message is received. British Telecom has a similar type of system called Message Master Plus.

In the United States millions are being spent on a relatively simple technique to monitor prisoners whereabouts by electronically 'tagging' them. The British government is about to import this technology. Has anyone explored the possibility of such a system to monitor elderly people who volunteer for such monitoring for their care and safety.

The Interactive Resonance

Some readers may remember the Teaching Machines of the Sixties. Interactivity and self-learning were the hyperboles used to sell them. By present day developments they were as 'interactive' as a drugged musang. Despite the dismal failure of Teaching Machines the word is still with us - if anything at the very heart of IT. The reason should be obvious from the previous chapter. The speed and memory that can be packed on a chip enables systems to be friendlier. This means exactly what the Amendments Act spells out - systems that take account of the specific needs of individual users. Also systems that respond immediately and accurately to user requests. But what does it all mean in real terms?

Interactivity entails the ability to store and display text and images together; using computers to manipulate and produce sound, images and text. It also means the ability to control the interfacing of other media such as audio, telephone, video, CD-ROM and other computers. In other words it refers to systems that help us think and control, and which can be used as tools to model and solve complex problems. (Some people call these multimedia interactive systems "hypermedia" systems.)

One such example combines an infinitely flexible mixture of sound, pictures, text and graphics. Called CD Interactive (CDI) the system was recently demonstrated in Japan by Sony. It featured a rock band playing through hi-fi speakers, a television attached to the CD player showed a series of high-quality still colour pictures, static text, snatches of motion colour video, and full-motion cartoon graphics. Viewers can choose what they wish to view or hear by moving a cursor to menu options displayed on the screen. The cursor can be moved by a wide range of switches.

CDI is primarily intended for the education and training sector. Although Sony is promising CDI for a wide range of applications it will be some time before we see its particular benefits in special needs. It is possible of course that the sheer pressure to find quick markets or to conform to the Amendments Act will hasten the Japanese and make CDI generally available.

Ukanian efforts by comparison seem lugubrious and fairly mundane. Despite interactive videos (IVs) potential, none of our developments consider special needs in any way. The Department of Education and Science which should be leading the field is myopically hazy about its direction. The Department of Employment and the futureless Training Commission have barely caught-up with 'interactive' systems. Only the Department of Trade and Industry is doing anything in the field and you could not accuse it of being ambitious. The Department has sunk over £3 million into producing eight interactive video discs on a range of topics.

So what are the pointers for us? The pointers are crisp and clear. They point westwards across the Atlantic and beyond. So beyond in fact that it becomes the East. In future we will be importing IV technology from these directions - if we can afford it.

Icons, Earcons, Sensicons - The Frontier

There is much more to 'inter-activity' than meets the eye. In 1987 Apple Computers announced the advent of their Hypercard. It was the latest in a series of achievements over the years - mice, windows and icons. With Hypercard Apple introduced us to object-oriented programming languages - a new kind of programming environment that organises all forms of information into what appears as stacks of index cards. This means you can create all sorts of 'cards' on the VDU containing text, pictures, numbers, random ideas, instructions, etc. This 'stackware' approach arose from the originator's intention to apply the human ability for 'associative organisation' - placing images, words, ideas into many cross referenced topics.

Hypercard is at the mergepoint of abilities. The best part is that it doesn't care whether you are disabled or ordinary. It caters for both. The user interacts through a suitable keyboard and a set of icons available on screen. The commands are close enough to everyday English to be understood by the average user. Hypercard and its future permutations represent a great promise to naive users of computer programs in daily living, education, training, employment and aspects of health. But there is even more to interactivity - in fact, considering the range of human types the term represents infinite possibilities.

We already have systems which can almost predict the words you wish to use in a sentence. These even try to conform to your style of writing. There are expert or knowledge based systems, and there are A1 systems of sorts. There are various modes of interactivity and means of compensating for certain types of cognitive deficiencies. This means we are technically capable of taking a giant leap forward into the twenty-first century by enabling a fair proportion of mentally handicapped people to carry out tasks which would have been unthinkable only a few years ago. Given full support, word-processing, data retrieval/provision; control of certain components of the environment, information analysis and display tools, and other control processes could be within their capabilities. A stupendous leap from the time Itard discovered the wild boy of Aveyron and the great Binet began devising a set of strategies to 'educate' mentally handicapped children.

At the centre of some of the most interesting developments is Rank Xerox's EuroPARC - a European version of its famous Palo Alto Research Centre (PARC), USA. One of its major remits is to radically rethink the way we operate and interact with computers. One approach is to take advantage of all our senses. One early result is the use of "earcons" as opposed to icons. These would consist of a range of sounds and tell the user how much memory is left, how close it is to finishing, which task it is performing, etc. The user could be taught what each sound, reverberation, note or buzz, meant at the start of each program.

A more ambitious long-term programme funded to the tune of £100 million is being undertaken by Professor Ken Sakamura at Tokyo University. He is working on a super-computer called TRON (The Real-Time Operating System Nucleus). TRON will use most of the concepts mentioned this far. It will link household appliances and sensors; be as powerful as the best mini-computer, yet as simple to use as pen and paper. It will accept handwritten, oral or keyed instructions. The goal is to make TRON as thin as a sheet of cardboard so that it is light, can fold up and be stuffed into a bag or the pocket of a wheelchair. (How about a wearable TRON?)

It should be noted that the pen and paper method of interacting with computers already exists. In late 1988 Pencept (Massachusetts, USA) started marketing the Penpad tablet which allows a computer to recognise and then act on rough hand-written instructions or text. One result is perfect typewritten text on screen. Given the range of hand-writing this is a major achievement in itself. (It is another nail in the QWERTY keyboard's coffin which will largely disappear in about twenty years.) Penpad goes further in that it can be used like a mouse to manipulate designs or a program. In the UK it is available from Bergman and Company of London.

Necrolatry

There will be (note the oracular "will") one curious by-product of all this "interactivity." It will be a bizarre manifestation of a uniquely American special need - necrolatry. Within the next decade Americans will no longer be content on 'immortalising their dead with cryogenics or sending their ashes hurtling around the earth's orbit. Using the full power of all the developments mentioned in this Directory - A1, imaging, voice emulation/synthesis, predictivity, VDI, individual language style, parallel and neural processing, etc., they will be holding conversations with their long gone ones. Think of it, you could choose to summon up a very realistic moving/talking face on a large flat screen of your favourite uncle or a President and have a 'genuinely meaningful' dialogue. Technically pets will be easier to image given their very limited vocal range. And it could all start happening within five years.

But "five years" is tomorrow, too far. We have the more important pulsating here and now to take care of. For instance there are vast problems of system compatibility. It is no good being able to control your central heating from your wheelchair if it also sets your dishwasher going at the same time. It is no good ordering one of the goodies in this Directory from Taiwan only to find it needs different voltage. Fortunately the problem is being tackled by a consortium led by Thorn-EMI with £2.5 million from the European Commission. It will still be many years before the issues are resolved - manufacturers have too much money at stake.

The Road to Mediocrity

There are other more intractible problems exacerbated by the UK's recent 'discovery' that it has about two million more disabled people. At a time of strangulating cut-backs in health/education/employment/care provision, how do you make sense of two million more human beings. The answer is so predictable, it follows a prescription established over the past seven or eight years. In a democracy it is the clamerous opposition and the clarion call of disabled people themselves that is more obvious by its absence - not the science of disappearing figures, which is the Government's anastrophe for progress. Ukanian intentions in the present political climate seem to exist like flies trapped in amber.

Whilst their political masters talk of British technology spinning fluff into gold, the utter failure of Whitehall to cope with such a vast canvas looms up for inspection. What are the reasons for our obvious and increasing mediocrity. First of all despite the horrendous cutbacks the field of special needs acquired some of the strangest bed fellows and protagonists - consultants. They emerged almost overnight once the Government announced its two big schemes in 1979/80 - DTI's IT Awareness Programme and the DES's Microelectronics in Education Program (MEP). It was most certainly the almond smell of money that drew them out rather than any intrinsic interest or specialist knowledge on the topic. It did not really matter what you were. As long as you called yourself a consultant you represented the free spirit of enterprise. The only other qualifications needed were the ability to herald the technological dawn with your mouth (as opposed to action), and to accrue short-term public relations for the paymasters. Cut-backs became a private joke as the consultants got their dough by the bucketful. (The small amounts that fell on fertile ground did produce spectacular results.)

As always memoflaged civil servants conformed to their masters' ideology with alacrity - but, also with catatonic ignorance. Instead of finding out more about IT or special needs they merely hastened to please. They made sure largess flowed in the opposite direction to conventional wisdom. This new thinking brought on a new form of cynicism towards underprivileged groups. And it was not race relations, which has consistently been an unpopular topic in Britain, but phrases like 'equal opportunities 'and' disability rights' which began to be stood on their heads. The new ideology proclaimed these only had meaning in the context of privatisation. How do you privatise equal opportunities?

If anyone read the great Peter Large who kept his finger on the pulse in the Guardian they were not letting on. Over the years his warnings have been met with the languid air of complacency. Another curious recent phenomena is the genteel quietism of Members of Parliament in opposition. The Juggernaut along the road to mediocrity in IT and special needs is being aided and abetted by this quietism. How very strange! Only a few years back the UK held the centre stage in these developments.

Let us end with trumpets and trombones because this Directory is a celebration of the Amendment's Act. It is also a homage to the indomitable human spirit which will carry on caring and sharing whatever shackles are imposed on it. The trumpets to IT were sounded long ago as 1982 by Michael Williams, a speechless writer speaking at Stanford University:

"Two years ago I was introduced to the most exciting technological development for disabled people I've ever seen: synthetic speech. If, when I was a little boy, someone told me that I would grow up and make speeches to large groups, I would have called him either a fool or a madman. Yet here I am .... I can only say this: modern technology has allowed me to release my creative spirit where it can soar, free, high above the clouds. Without the fruits of modern technology, I would probably be stuck counting the hours until my death.

To some people, this synthesiser may be an ugly box with cables. To me, however, it is an analogue of freedom. Let freedom ring."

Quoted in: New Information Technology
in the Education of Disabled Children
and Adults

Hawkridge, Vincent and Halls
Croom Helm 1984

JIM SINGH SANDHU

October 1988

Jim Sandhu is Head of HPRU; Member National Advisory Council on Employment of Disabled People; Founding Member DTI's Technical Liaison Group on Disability; Member European Commission's HANDYNET Panel 1984-86; Member North Tyne Committee on Employment of Disabled People; Member Information Panel, Royal Society of Arts Medic Design Awards; Member EEC's New Technology Panel (1986); Trustee of Tyne Tees Television's Asian, African, and Afro-Caribean Television Broadcasting Training Trust. He is also a Fellow of the Royal Society of Arts and a Churchill Fellow.

Acknowledgements

Sources

- Computer News
- What's New in Computing
- Byte
- Personal Computer World
- PC User
- New Scientist
- Closing The Gap
- Mini Micro News
- The Guardian
- Neil Squire Foundation Newsletter

It took us over one year doing the rounds of Government departments asking for small funds for this Directory, before realising the futility of the exercise. It took just four months elsewhere to raise requisite sums to enable us to make a start. We are deeply grateful to Thorn EMI for its trust and largest single contribution. Our thanks is also due to the following for smaller contributions:

Grand Metropolitan Charitable Trust
Imperial Chemical Industries
Toys for the Handicapped
Deron

Our special thanks goes to MARTIN HONEYSETT whose cartoons have made all the difference. They convey much more in a single sketch than a thousand words. Publishers seriously interested in his work can contact him through us.

We are grateful to all manufacturers and suppliers from the USA, Canada, UK and Europe who were prompt in sending us information, illustrations and photos. They deserve all the orders they can get.

As always our warmest thanks go to the following HPRU staff whose help was invaluable in preparing this publication: Doreen Pallister, Trish Bruce and Lee Jowsey.

DEDICATION

This Directory is dedicated to:

- Professor Laing Barden, Director, Newcastle upon Tyne Polytechnic, and founder of HPRU.
- Dr. Graham Grant, Chairman, North Tyne Committee on Employment of Disabled People.
- Les Park, outgoing Executive Director, United Cerebral Palsy of New York, soon to move to Rehabilitation International.

HANDICAPPED PERSONS RESEARCH UNIT

The HPRU is a unique blend of research, design, informatics, and wide-ranging consultancy in special needs. There are few similar units in the UK or Europe that combine theory in all four areas with the harsh realities of professional practice. Its output over the past eight years is one proof that British Polytechnics are not only equal to British Universities but in some respects far better established to reflect society at large or their particular communities.

Examples of the latter not generally publicised are HPRU's preparation and dissemination of a free guide to the Tyne and Wear Metro system; founding of a successful electronic manufacturing business; initiation of a large youth training trust; active involvement with local schools by providing free information and setting various projects on special needs for their pupils. The most recent such event was undertaken jointly with Professor Bob Hill of the Polytechnic's Photovoltaics Applications Centre. The prize of £500 attracted some of the best young minds in the North East.

Perhaps, the most crucial reflection of the reality principle given the zeitgeist is that most projects in HPRU are externally sponsored. This single fact says everything that needs to be said about the Unit in terms of footslog, sweat and muscle.

Over the past years our work has been sponsored by the Joint Committee of Science Engineering Research Council/Economic Science Research Council, Department of Trade and Industry, Department of Health and Social Security, Manpower Services Commission, Sinclair Research, Gatsby Trust, IBM (UK) Trust, Washington Development Corporation, Council for Educational Technology, etc. Funds are also raised from the sale of our publications, and database information.

Some examples of past research projects are:

The evaluation of three screen matrices for the CEDRIC system.

The effect of age and disability on unaccompanied pedestrians' walking velocity measured unobtrusively and experimentally.

Cognitive intervention strategies with severely handicapped children using a Piagetian approach in varying conditions of sensory stimulation.

A study into disability rights and benefits.

Some examples of design projects are:

Equestrian equipment for disabled people.

An integrated adventure playground.

Ergonomic investigation of kitchens.

A range of electronic training aids.

Design and organisation of over twenty exhibitions on various aspects of special needs.

Graphic teaching aids.

Examples of informatic projects are:

Compilation of five separate thesauri for HPRU databases.

Establishment of the British Database on Research into Aids for the Disabled (B.A.R.D.).

Establishment of BARDSOFT, a database of software information covering all non-medical aspects of special needs.

Establishment of BARDEMP, a bibliographical database covering all aspects of careers, training, legislation, employment, etc.

Establishment of BARDSEARCH, a database of British (non-medical) research covering all aspects of special needs except equipment.

Establishment of BARDTEC, a database on the cutting edge of mainly microelectronic-based technology. Much of the information for CT89 comes from BARDTEC.

Examples of recent consultancy projects are:

Evaluation of electronic wheelchair for B & K Inc., California.

Evaluation of a Leisure Resource Centre for Mentally Handicapped Adults in Cleveland for Playmatters.

Evaluation of checklists and a range of domestic appliances for the Research Institute for Consumer Affairs/Consumers Association.

The last, which is a collaborative effort with RICA is a significant development. One of its goals is to explore the possibility of 'convenience ratings' for people with special needs. These could then be published alongside the results of the usual tests on reliability and performance in Which? reports, and perhaps eventually be incorporated in the regular testing programme of the Consumers Association and in separate RICA publications. In addition HPRU itself hopes to collaborate with manufacturers by providing them with feedback, guidelines, consultancy.

ALTERNATIVE INPUT & GENERAL SYSTEMS

ACS Medicom Computer System

A complete system for communication, environmental control, and computer access based on two IBM PC computers. The two computers are connected on a parallel system, and allow the user access to all IBM PC software. Two input systems are provided: voice and switch. The computer recognizes and accepts as input utterences made via the voice input system. The switch input system allows data to be entered via a single switch, multiple switches or a joystick. The system can control various appliances with BSR X-10 control modules, dial and talk on the telephone, or communicate via computer networks. Can also be used for wheelchair and robotics control.

Supplier: ACS TELECOM

VoiceWorks

VoiceWorks is an integrated voice controlled computer system. It features an AT compatible computer with hard and floppy disks; an Enhanced Graphics Adaptor monitor; keyboard; IntroVoice VI voice input/output subsystem; system software and First Choice - A multi purpose package which incorporates a word processor, speadsheet, database, business graphics, etc.

Price: US $2995
Supplier: THE VOICE CONNECTION

Voice Interactive Computer

A speech input computer system giving voice control over programs and functions. The voice system is installed in an 8088 based, dual floppy and 20M hard drive, turbo computer, and has a 1000 word, user definable vocabulary. Options for the computer include voice output, modem and emulator systems. Microphone designs include headset, desk mount, throat mounted and wireless.

Price: US $6500 + Freight
Supplier: HY-TEK MANUFACTURING CO. INC.

DART 5000

A complete computer workstation with voice input capability. Comes with a full 1000 word active vocabulary with the capability for up to a 5000 word effective vocabulary through word completion software. The unit must be programmed to recognise particular utterances which can serve as input to the computer. The user can define what a particular utterance will trigger. An MS-DOS-based microcomputer and vocabulary management software are supplied.

Supplier: DRAGON SYSTEMS INC.

Voice Driver

A voice input system that allows spoken utterances to serve as input to a computer. After training the system, the user assigns strings of characters to certain utterances which are sent to the computer as keyboard input when spoken into the microphone. Can store up to 80 utterance-response sets in its 8K memory. Other vocabularies can be stored on disc and retrieved. The keyboard can be used simultaneously with the Voice Driver. Systems can be upgraded or downgraded for word capacity (80 or 160) by swapping an integrated circuit card.

Supplier: VOICE RECOGNITION SYSTEMS

Vocalink Series 4000

A voice recognition system designed to provide voice input to a computer. The user trains the system to recognise certain spoken utterances (from 1 to 2 seconds long), and to associate each one with a character or string of characters. These can then be sent to the computer as input. Accepts continuous speech. Up to 100 words can be in the system's memory at a time, and any number of vocabularies for different users or different applications may be stored on cartridges and loaded when needed. Software is provided to help the user train the system and create and manage vocabularies. A headset with microphone is provided.

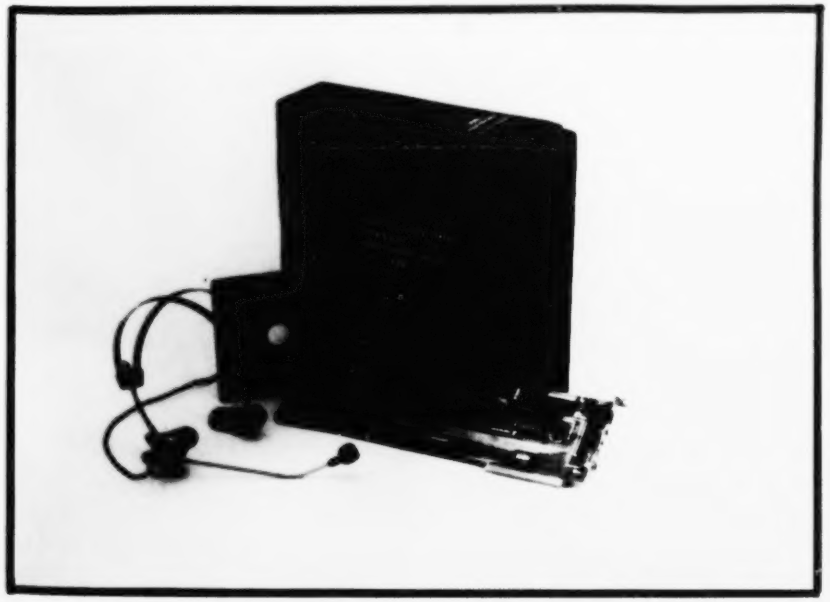
Supplier: INTERSTATE VOICE PRODUCTS

VoiceScribe

A discrete utterance, speaker dependent voice recognition system. An utterance can be any word or phrase up to 127 characters long, including non printable keystrokes such as functions, cursor movements and return. VoiceScribe can be trained to recognise up to 1000 commands - providing voice control over any IBM PC/XT/AT or compatible. Hardware requirements: a full length expansion slot, one hard disk drive, one floppy disk drive, monitor and 640K RAM. Included are: circuit board, voice cancelling microphone/headset, tutorials and software. Software overlays are provided for several well known programs including Lotus 1-2-3, Dbase and MS-DOS. A compiler feature enables custom overlays to be created for other applications.

Price: £895 (for the 128 utterance version £395)
Supplier: CHERRY ELECTRICAL PRODUCTS LTD.

▼



Pronounce

Pronounce is a speech recognition system for use with IBM PCs and compatibles. The plug in board fits into any full size slot of the computer. It allows speech driven macro commands to be developed, with each utterance (length 0.5s to 2s) able to represent up to 255 keystrokes. Pronounce comes with a microphone and a starter vocabulary of Auto (A1) and Lotus 1-2-3 commands. Can be used concurrently with a keyboard, mouse, digitiser or bar code reader.

Price: US $788-3288
Supplier: MTI INC.

Micro-Voice

A voice recognition system for BBC microcomputers. Micro-Voice has unlimited recognition vocabulary stored in 10 phrase subsets, each template requires 1080 bytes of memory. Operating and training instructions enable speech recognition to be incorporated into any compatible program. It is supplied with Speech-Writer, a voice driven word processing package.

Price: £265 + VAT
Options: Rom Extensions; software: Math-Talk,
Voice-Print, Turtle Talk
Supplier: QED LTD.

Voice Communications System

A device that allows spoken words to be used as input to an IBM PC computer. Can be trained to recognise a word spoken by more than one individual. Vocabularies of trained words can be stored and recalled, each can be up to 200 words long. Also recognises telephone signals. The system consists of an internal circuit card and options: a microphone and headset; a program that offers an appointment calendar with a built-in reminder; a telephone directory with auto-dial; and telephone answering and message taking.

Supplier: ITT INFORMATION SYSTEMS

Coretechs VET3

Allows spoken phrases to serve as input to a computer. A vocabulary of up to 200 words, letters, or phrases is created for each application. A sequence of characters is assigned to each recognised utterence. When the phrase is spoken into the microphone, the assigned characters are sent to the computer as keyboard input. Allows continuous speech. Additional 200-word vocabularies may be created, stored, and recalled when needed. Messages can also be digitally stored and played back. Coretechs VET3 is an external unit with output via an RS-232 serial port.

Supplier: SCOTT INSTRUMENTS CO.

Home Automation Link (H.A.L.)

HAL allows operation of a hard disk IBM XT or AT or compatible entirely by voice input. The Entry system utilises the Multiple Choice program to provide voice controlled windows. One window is used for the environmental control program. Simple voice commands allow the user to switch windows. Hardware: IntroVoice VI board, HAL board, headset with boom mike and speaker or earphone receiver. Software: IntroVoice VI, HAL, Multiple Voice, Automenu.

Price: US $1095
Supplier: THE VOICE CONNECTION

TI-Speech

A hardware and software package that allows voice to serve as input and synthesized voice as output. User trains system to recognise certain short utterances which can be programmed to trigger certain characters or commands as input to the computer. Synthesized speech can also be programmed to serve as output from an applications program. Hardware consists of a circuit card, a microphone and a speaker; the software consists of a programming guide, a vocabulary management program and a program that allows characters to be entered as on the standard keyboard.

Supplier: TEXAS INSTRUMENTS INC.

Key Tronic KB5152V Speech Recognition Keyboard

The KB5152V uses speech recognition to give commands to a computer. The keyboard offers IBM PC and XT plug compatibility and a fully featured layout. The speech recognition works through the keyboard electronics, and as the commands are presented to the computer just like key input, no software modifications are necessary.

*No additional desk space or PC adder board is required as it's integrated within the keyboard enclosure.

*The keyboard is supplied complete with: noise cancelling microphone, foot switch, user's manual and vocabulary management software.

The KB5152 has a 160 word vocabulary and associated commands which can be tailored for the user's own applications.

Supplier: CERATECH ELECTRONICS LTD.

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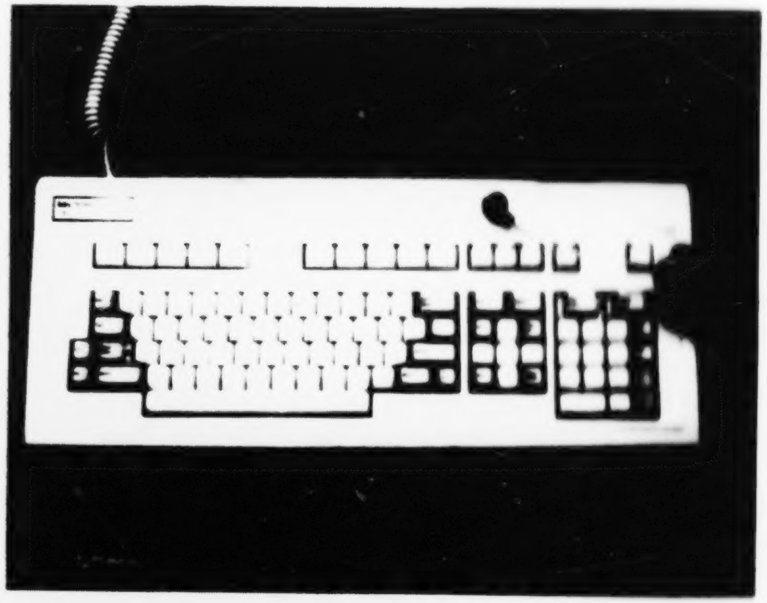


Voice Systems Package

An integrated speech output/input hardware and software package for the IBM PC. Consists of a voice recognition device (VRD), a Speech Plus synthesizer, and a voiced screen review called Speech DOS. Data can be entered via the VRD which has a user-definable vocabulary of upto 1000 words or phrases for each application. The VRD is a self-contained desktop unit and, operating in the transparent mode, allows it to be used as input to existing applications by translating voice commands automatically into a series of user-defined keyboard inputs. Data is also entered on the keyboard. The synthesizer converts ASCII text messages to speech. DOS voice/keyboard input to speech output.

Supplier: SRI DISTRIBUTION INC.

Introvoice III

A combination keyboard and voice input system for an IBM PC, AT and XT. The keyboard offers separate numeric and cursor keypads, top-row function keys, and a voice on/off key. Can be trained to recognise utterances of up to 1.25 seconds in length, and programmed to enter a particular string (1 to 76 characters long) for each trained utterance the user speaks into the microphone. For each application, separate vocabularies can be constructed and stored. Software provided creates and stores vocabulary; loads applications programs and vocabulary by voice; has pre-programmed vocabularies for some popular applications programs. Comes with microphone, manual, software and is portable.

Price: US $995
Supplier: VOICE CONNECTION

Introvoice V

A voice input system for IBM PC, XT, AT and PS/2 Model 2. It is trained to recognise spoken utterances and then programs these to trigger strings of characters. Vocabularies of up to 500 utterances can be created for each applications program. The number of characters triggered depends upon how much memory the user is willing to consume, the maximum number of characters is 1000. The microphone can be turned on and off by voice command. Software provided includes a program to assist the user in creating vocabularies as well as one with predetermined vocabularies for applications software. Includes a PC board, microphone, manual and software.

Price: US $495
Supplier: VOICE CONNECTION

IntroVoice VI

IntroVoice VI is a voice input/output system designed for the IBM PC/XT/AT or compatibles. The half size circuit board combines voice recognition of 500 words with an accuracy of better than 98% and also provides unlimited text to speech synthesis. IntroVoice VI listens to command or data entries and responds by sending keystrokes to the computer and text to the on board synthesiser for audio output verification and prompting.
Voice recognition and synthesis character strings, are defined by the Voice Utility Program (VUP) supplied with the system. IntroVoice VI is compatible with any IBM application program. Supplied are: circuit board, system software and vocabularies, hand held microphone, speaker and manual.

Price: US $595
Supplier: THE VOICE CONNECTION

SAR-100 Voice Plus Board

A voice recognition and audio-response board for the IBM PC that allows voice to be used as input. Can be trained to recognise utterances of 0.2 to 2 seconds in duration. The user assigns each trained word a string of ASCII characters. When utterances are spoken into the microphone, the characters are sent to the computer as keyboard input. Up to 250 words of characters can be stored in the card's memory. Can also digitize, store, and play back spoken words and phrases. Built-in software helps with assigning and programming voice input and output. A floppy disk with additional programming software is also provided.

Price:	US $595
Supplier:	NEC AMERICA INC.

VTR 6050 Series II

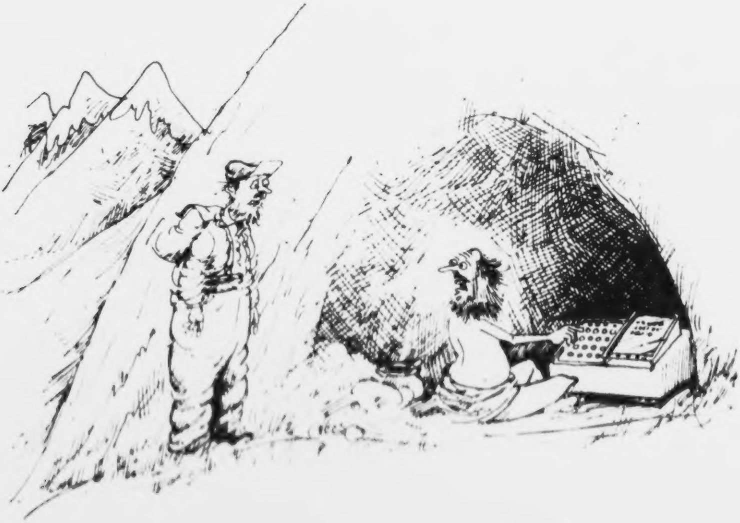
The voice terminal is a device that allows voice to be used as input to any computer accepting RS-232. User programs the unit to associate certain utterances with strings of ASCII characters (up to 30). These strings can then be sent to the host computer as RS-232 input. Up to 20 strings can be stored in the buffer before being transmitted. Individual vocabularies of utterances can contain up to 150 words each with the number of potential vocabularies being limited by the amount of memory accessible to the VTR 6050. Accepts and executes commands sent from the host computer, and can digitise, store and play back voice messages. Input and output can be sent via telephone.

Price:	US $4,950
Supplier:	VOTAN

R/S II Wireless Link

A system that transmits speech from a remote location to the voice input module of a computer. User speaks into a microphone connected to a portable transmitter unit which sends the signal via radio wave to a stationary unit connected directly to a computer's voice input module. Can also be equipped to accept audio signals sent back from the computer's voice input module. Designed to work with any voice input module. Includes headset, housing for 10-hour duty cycle, base radio, charger, battery pack and interconnect cable to recogniser.

Supplier: COMMUNICATIONS APPLIED TECHNOLOGY



'I used to meditate for hours over a question, now I can do it in seconds.'

Psion Organiser

A pocket sized computer with calculator style keys. It comes ready programmed with message and information storage programs and a diary system. Additional programs can be loaded in from Datapaks. The display shows two lines of 16 characters. 8K and 32K versions are available, and the memory can be expanded to several times the size with Datapaks.
Modifications: software is available which slows down the key repeat, allows alternative inputs, enables the Organiser to work as a keyboard to a BBC or IBM compatible, enables the Organiser to work with a speech synthesiser.

Supplier: FOUNDATION FOR COMMUNICATION FOR THE DISA

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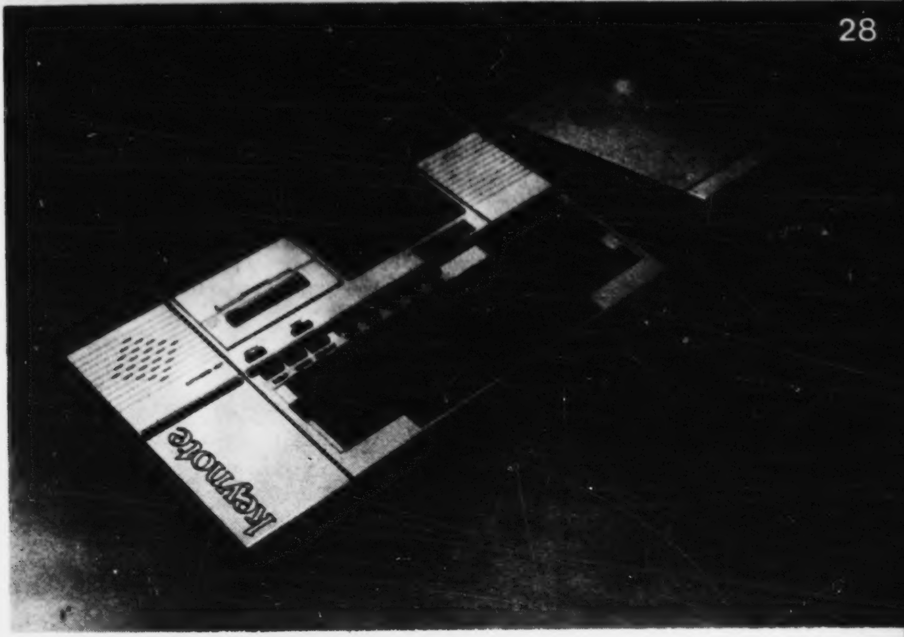
PSION ORGANISER II
Information
on tap
PSION

LED



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Keynote

A portable word processor and scientific calculator with speech output. Keynote has an integral disk drive and two days on site training are included in the price.

Price: (40K) £2375, (84K) £2525
Options: Modem, second disk drive, various software and training packages.
Supplier: LVA MARKETING LTD.

Brief-Talk

A portable, speech output computer designed for people who are visually impaired. Brief-Talk consists of a keyboard, 128k memory, built-in speech synthesiser and a briefcase. Brief-Talk is compatible with the Apple IIc and will run many commercial software packages such as WorkTalk, CalcTalk, Slotbuster, etc.

Price: US $2195
Supplier: LS & S GROUP INC.

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Small-Talk Plus

A portable computer with a built in speech synthesiser, microcassette drive, printer and LCD screen. Integral software includes WordTalk, CalcTalk and TermTalk (TermTalk is a 'smart terminal' communications program). Small-Talk has a standard RS232C serial interface for the connection of peripherals such as a modem, printer or Braille device. A carrying case, battery charger and mains adaptor are included. Weight: 2.27Kg.

Price: US $1495
Supplier: LS & S GROUP INC.

DANCE ACADEMY

'Computers have solved my problem of lack of instructors.'

MANAGER
SPECIAL OFFER

'Would you mind if I plugged in my computer? I've made out my shopping list on it.'

RealVoice

Based upon the Epson HX-20 lap top computer, RealVoice is a portable, synthesised voice communicator with a full sized keyboard, built in printer, microcassette drive and an LCD screen. An abbreviation expansion program is included which allows messages to be recalled by 1, 2 or 3 keystrokes. Messages can be prepared on the keyboard and directed to the printer or spoken in a female voice. Switches may be used to create messages by scanning the alphabet on the LCD screen. Morse code or an expanded keyboard may also be used.

Price:	£1690
Options:	Expanded keyboard and overlays, mounting kits, switches.
Supplier:	CAMBRIDGE ADAPTIVE COMMUNICATION

Words+ Equalizer

A speech output communication aid and word processing system for people who use switches. Hardware: a Datavue Spark computer with 640k memory and single disc drive, a back lit fluorescent LCD screen and a speech synthesiser. Software: Equalizer II, a word processing and communication program which incorporates a number of assistive strategies such as word prediction, abbreviation expansion, instant responses, automatic capitalisation of certain words and others. A number of hardware configurations are available, including a remotely mounted screen for wheelchair installation, internal or external battery power and mains powered.

Price: £2227 - £4420
Options: Switches.
Supplier: CAMBRIDGE ADAPTIVE COMMUNICATION ►

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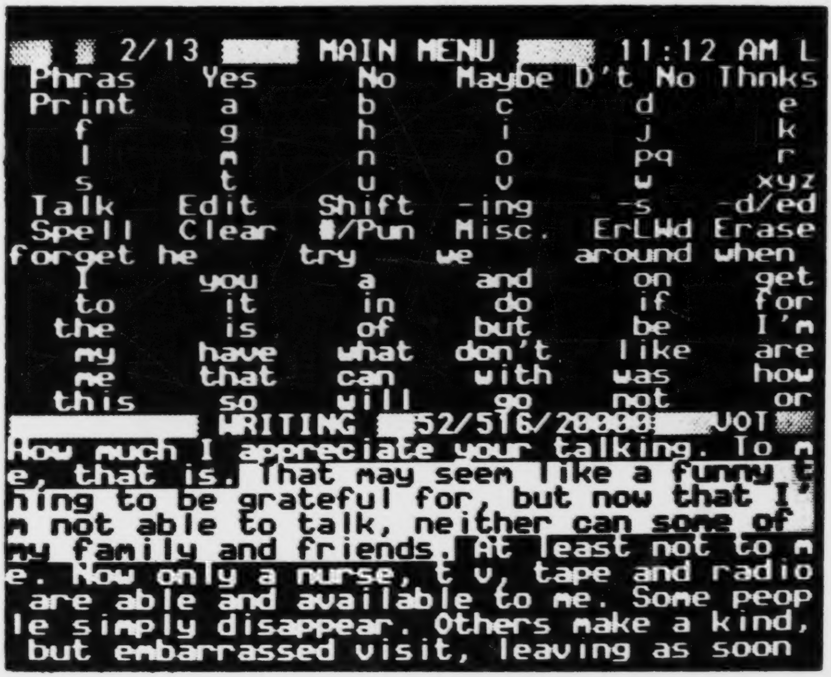

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    2/13       MAIN MENU       11:12 AM L
 Phras   Yes      No    Maybe D't No Thnks
 Print    a        b       c       d      e
   f      g        h       i       j      k
   l      m        n       o       pq     r
   s      t        u       v       w    xyz
 Talk   Edit    Shift   -ing      -s  -d/ed
 Spell  Clear   #/Pun   Misc.  ErLWd Erase
forget he     try    we      around when
   I      you      a      and      on    get
  to       it      in      do      if    for
  the      is      of     but      be    I'm
   my     have    what   don't    like    are
   me     that    can    with     was    how
  this     so     will    go      not     or
            WRITING   52/516/20000    VOT
How much I appreciate your talking. To m
e, that is. That may seem like a funny t
hing to be grateful for, but now that I'
m not able to talk, neither can some of
my family and friends. At least not to m
e. Now only a nurse, t v, tape and radio
 are able and available to me. Some peop
le simply disappear. Others make a kind,
 but embarrassed visit, leaving as soon
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EvalPAC

EvalPAC is the RealVoice system with the addition of a scanning panel, light pointer and additional software. It can be accessed by light pointer, gross motor scanning, joystick and morse code input.

Price: £2750
Options: Expanded keyboard, mounting kits, switches.
Supplier: CAMBRIDGE ADAPTIVE COMMUNICATION

TANGO

A switch operated keyboard substitute compatible with most personal computers. Menus are shown on TANGO's display and words, formulae etc. can be accessed from the built-in dictionary at a single keystroke. Tango is compatible with all software and can be used with a speech synthesiser.

Supplier: FALCK PRODUKTER A/S

31

C.I.F. (Control Interface)

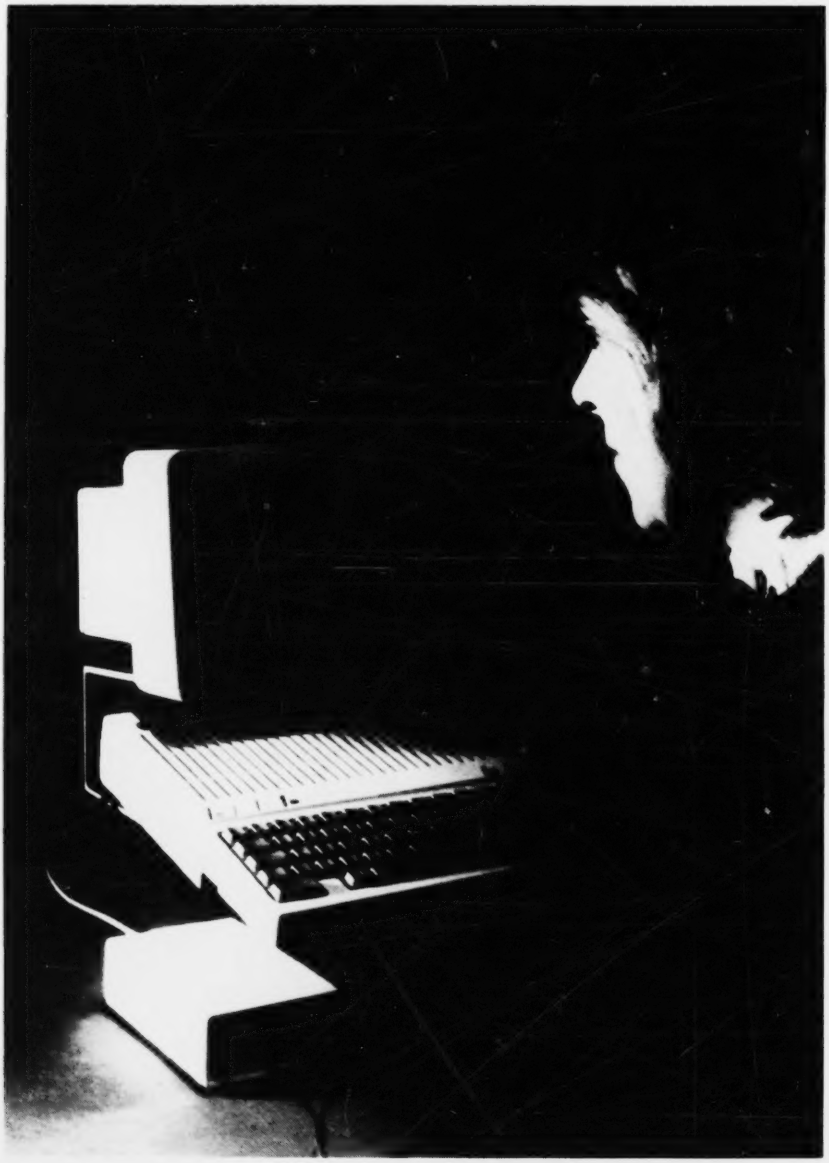
Developed by Synaps Electronics ApS of Denmark, and granted a worldwide patent, the CIF is able to pick up nerve impulses and employ these for the control of electrical appliances. It is incorporated in a range of switches, communication devices and alarms, which can be activated by touch, sound, exhalation, shaking light, magnetism, etc.

Supplier: AREMCO

Computer Steering System ▶

A complete computer system comprising an Apple IIc, the HM164 CIF switch, Mac Apple software and a special program for word processing, arithmetic and graphics. The system is controlled via a special activation sensor (in this case a throat microphone). Functions and characters are displayed on the screen, selection is by stopping the scanning cursor at the chosen character or symbol. Activation devices include touch plate, skin contact, throat microphone, exhalation microphone, special microphone and hand operated switch.

Price: On application
Supplier: AREMCO



Steeper 'Text Editor'

The 'Text Editor' is a computer system based on the Acorn BBC Master 128 and is designed to be operated with a single input switch control. When used as a word processor, the two screen display allows for a control grid to be displayed on one screen and for scrolling text to be displayed on the other. The machine has been designed to be compatible with the Steeper Environmental Controller (SECIA) but it can also be operated as a Stand Alone System using a single input switch or a photonic wand input. The (SECIA) interface has been designed so that under any failure condition, control defaults from the computer to the Environmental Control.

Price: On application
Options: Modified version of Folio - a word processing programme.
Supplier: HUGH STEEPER LTD.

Liason

An independently usable computer work station for high-level quadraplegic children and adults. Using a Du-It wheelchair system and a Liaison, the user can approach his computer and turn it on; run and enter data into standard programs; graphically position as with a mouse, tablet, or joystick; concurrently use the telephone; and operate other peripheral accessories.

Price: US $3,000 - $3,500
Supplier: DU-IT CONTROL SYSTEMS GROUP INC.

HeadStart Workstation

Based on the Macintosh II microcomputer, the workstation features a 20Mb hard disk and 800K floppy disc, 23cm high resolution monitor and software (including word processing, graphics, desk management). A key feature is the on screen keyboard emulation program Headlines 2.0 which provides all the functions of a physical keyboard and which allows keyboard macros to be executed. This is normally controlled with a mouse, but there are a variety of special controls available.

Price: £5795
Supplier: BIT 32 LTD.

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Headstart View Control Pack

A special control device for the HeadStart Workstation. Designed for those with some degree of co-ordinated head movement, it is a lightweight device, similar to a telephonist's headset, which uses ultrasound to detect head movement and therefore control the screen pointer. This and the built in blow switch, give control over all Workstation functions.

Price: £950
Supplier: BIT 32 LTD.

HeadStart Visual Aid Pack

A hardware and software package which provides enlarged screen characters and graphics. Also gives speech output (headphones inc.).

Price: £950
Supplier: BIT 32 LTD.

HeadStart Environmental Control Pack

This enables mains devices to be controlled from the workstation by clicking simulated on-screen switches. Devices can be pre-programmed to switch on/off as part of a weekly cycle. The pack includes: a programmable control interface for up to 256 receiver modules, 6 x standard 16A receiver modules each with a 13A socket, control software, in-line mains filter and one day of training.

Price: £2500
Supplier: BIT 32 LTD.

Digimouse

A digital input device for the BBC Master computer. This mouse has three input keys and a linear lock feature. Included are a symbol library and zoom edit facility for graphic design.

Price: £64.90
Options: Software Chauffer - enables most software to run under mouse control by programming the mouse to imitate any key press.
Supplier: TOYS FOR THE HANDICAPPED

Mouse

A hand-held input device that moves the cursor on the PC screen. The user moves the mouse on its pad which has been placed on a flat surface. Can be used in place of a keyboard, or can serve as a pencil or paint brush with compatible graphics software. An RS-232 serial port is required.

Supplier: MOUSE SYSTEMS

Fulcrum Trackball Plus

A cursor pointing device, designed for interfacing with an IBM computer and many CAD/CAE environments via a standard RS232 port. Pointing and cursor control can be achieved by the use of the fingertips to position the ball. It requires 11.5 cm by 13.3 cm of desk space. Six user switches are provided for additional flexibility with menu driven software such as CAD/CAM applications.

Supplier: FULCRUM COMPUTER PRODUCTS

Cordless Mouse

The Manager Mouse Cordless transmits data to a host computer using infrared signals with a range of up to 2.22m from its receiver. It has a two wheel tracking system and a patented suspension system to give smooth tracking at any angle. Included is the KeyFree driver which takes over time consuming keyboard tasks and allows the mouse to be used with programs such as Lotus 1-2-3 and Dbase III. For use with IBM/XT/AT and compatible computers.

Price: £184
Supplier: NUMONICS (UK) LTD.

Footmouse

A cursor control device operated by foot movement. The base remains on the floor, and the cursor is moved by sliding the foot over the base in an up, down, left or right motion. Performs all the functions of the standard keyboard cursor keys, including auto-repeat if held down. Plugs in between the keyboard and the computer, and does not interfere with normal keyboard operations when in use.

Supplier: VERSATRON CORPORATION

Tracker Ball

The Marconi RB2 Tracker Ball plugs into the BBC Master user port and has a finger tip controlled ball which provides precise digital cursor commands. It comes with ROM which turns it into a general purpose input device.

Price: £60
Supplier: TOYS FOR THE HANDICAPPED

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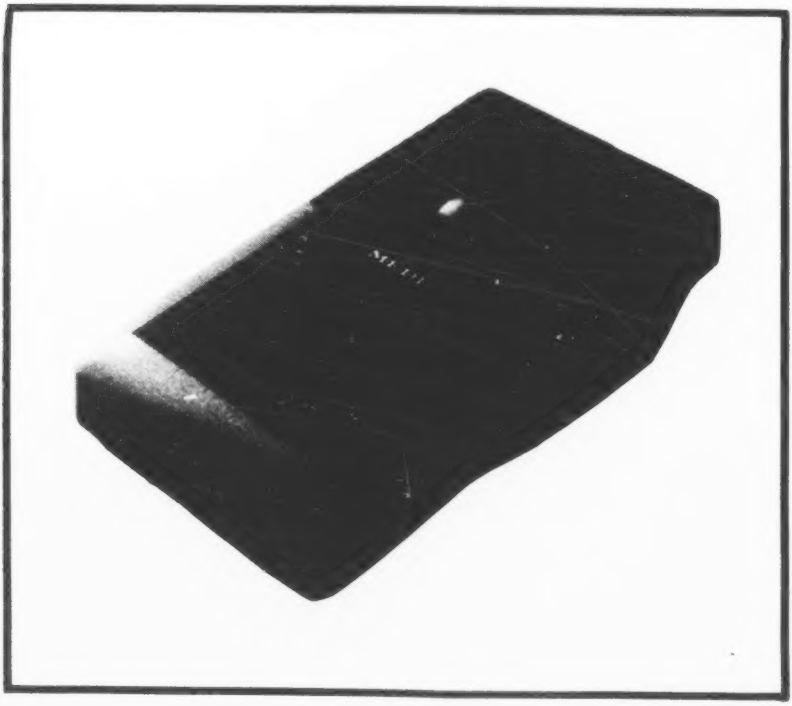


CompuScan

The CompuScan PCS235 is a desktop document scanner for the IBM XT, AT and compatibles. The PCS recognises all popular office type styles and the PC software (supplied) converts the format of a scanned document - making it compatible with leading word processing and desk top publishing packages. Feeder capacity: 50 sheets; scan speech: 30 seconds/page.

Price: £3250 + VAT
Options: Image processing.
Supplier: KENDATA PERIPHERALS LTD.

Polyform

The AEG Olympia Polyform is a desktop document reader and workstation. The reader recognises all standard fonts - typewriters, high speed printer, letter quality matrix printer and also handprinting. Documents can be read in batches of up to 100, with the data automatically sent to the workstation for later correction or individually read and corrected in the interactive mode. The forms software system can be used to define position and size of reading zones on a document and to define the zone type (eg alphanumeric, numeric, marks, etc).

Supplier: OLYMPIA BUSINESS MACHINES CO. LTD.

PC Scan

The Dest PC Scan with Textpac software is a document scanner for the IBM PC, XT, AT and compatibles and the Apple Macintosh (high speed SCS card required). It can recognise a large number of typestyles including proportionally spaced and dot matrix. The format processor formats text, inserts tabs, indents and centres before passing the scanned text directly into the word processing document. The PC Scan accepts single sheets and has a typical throughput of 30 seconds/page. Formscan have a range of text and image entry systems.

Price: £2375 + VAT
Supplier: FORMSCAN LTD.

Totec

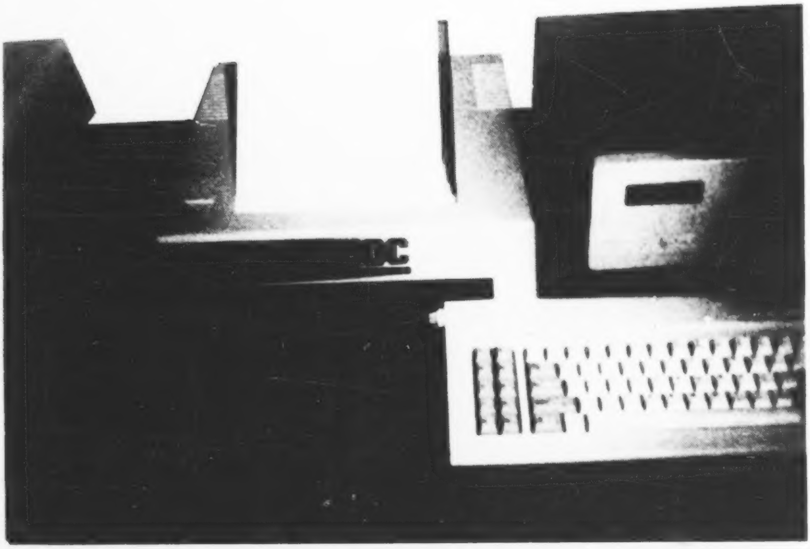
The Totec 5050 Multi Font OCR (optional character reader) permits direct input of European language documents to word processors, computer typesetting machines, telex terminals, etc. The unit can read up to 150 pages/hour and mount a maximum of 20 fonts - including English, French and German. The format processor automatically formats for text/data input, including margins, tabs, indents and line spacing, simplifying the editing of text on a word processor. Stacker and hopper capacities: 50 pages each.

Price: £7250
Options: Additional word processor formatters, software utilities.
Supplier: ASSET TECHNOLOGY PLC

Discover

The Kurzweil Discover 7320 is a document scanner for personal computers that scans and enters whole documents, in virtually any typestyle and with embedded illustrations. Discover's ICR (intelligent character recognition) technique allows it to read virtually all typestyles and sizes, so the operator does not have to select suitable material. This also means that no operator intervention is required for changes in typestyle within a document. Discover has a 50,000 word dictionary for context checking, any number of user defined dictionaries may be added, each up to 10,000 words. Optional software utilities convert the output to fully formatted files for word processors. Documents with graphics can be scanned, the graphics output being in one of several standard bit map formats, with selectable resolution and contrast. Document feeder capacity: 10 pages - system requirements: an IBM XT or AT running under MS DOS 3.0 or higher.

Price: £8,800
Options: Software Utilities
Supplier: ASSET TECHNOLOGY PLC



Adhoc 2000

A document scanner/input system for the IBM XT, AT and compatibles. Documents which have been transferred from paper to the computer are compatible with all the popular word processing and communication software packages. Specification: document character recognition - over 120 fonts; character size - 10 to 15 characters per inch; document size - 76 x 76mm to 216 x 356mm; scan time - 20 seconds per page. The speech output option allows scanned documents to be read - both before and after any editing, by word, sentence, paragraph, etc; the rate and pitch of speech are adjustable.

Price: £2300 approx
Options: Voice output.
Supplier: ALPHAVISION LTD.

Personal Reader

A reading machine with a hand-held scanner and a built-in speech synthesiser. Printed text is placed on the magnetised tablet which helps guide the scanner across the page. The unit verbally notes when the edge of the text is reached, instructing the reader to "continue" to the next section, scanning back the other way. Over 20 pages of text can be scanned and stored in memory and the information selectively read out by the DECtalk speech synthesiser. The Reader is controlled using an 18-button keypad.

Option: Desk-top scanner
Price: US $7950
Supplier: KURZWEIL COMPUTER PRODUCTS

Handscan

A handheld data entry device for IBM XTs and ATs and true compatibles. Handscan reads typed documents and computer printouts (letter quality, mainframe, PC laser and dot matrix) but not typeset and proportional pitch text. Information is entered directly into application software, as if by keyboard - no data files or formatting are required. Handscan has four function keys which give eight user definable functions. Any application software that accepts information from the keyboard in the standard manner will work with Handscan - spreadsheets, databases, word processors, etc. Package contents: hand held scanner, interface board, software and manual.

Price: £799
Supplier: READSTAR

TransImage 1000

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Designed as a keyboard alternative for IBM PC/XT/AT and compatible computers, the TransImage 1000 is a hand held optical data entry system which allows printed text to be selectively scanned. The pattern formed by the discrete elements of an image is analysed to determine which character it represents, so scanning is virtually font independent and font recognition is automatic. A general purpose application bridge is provided which filters data for insertion into specific MS DOS applications such as spreadsheets, word processors, databases, etc. The camera has six function buttons which can be programmed to emulate any key or combination of keystrokes.

Supplier: TECHNITRON DATA LTD.

Words-to-Voice

A complete system for optical character reading and word processing. Consists of an IBM PC, a DECtalk speech synthesizer, a Totec optical character reader (OCR), a printer, and thre programs on disc. The OCR scans over a typed text, identifies the characters, and transmits this information to the computer as electronic text. Text can then be printed on the printer, or spoken by the synthesizer. The 3 programs are: a communications program, a word processing program, and a voice output program. Each component is available separately.

Supplier: TOTEC COMPANY LTD.

◀Touch Window

A transparent, pressure sensitive surface for IBM PCs and compatibles. It attaches to a monitor with four quick release mounting strips to function as a touch screen; it also serves as an interactive book pad, a graphics tablet and as an input pad. Touch Window averages the area of contact to give the centre co-ordinates of the contact area - so pixel resolution is achieved even when touching with a large finger. The software tool kit (optional) assists programmers define touch active rectangles and determine when they are touched.

Price:	£270 + VAT
Options:	Cable adaptor for the Apple II and II+, scratch resistant overlays, styli.
Supplier:	ELINOR TECHNOLOGY

Pacer 33

A 356mm touch screen for personal computers, consisting of a Phillips monitor fitted with a Micro Touch screen. The screen has a resolution of 1024 x 1024 touch points, and the controller averages the areas of touch to a single data point - allowing a large finger or stylus to address a single point. The glass surface of the screen is resistant to damage by sharp objects such as pens, pencils etc. The Driver software (optional) provides programmers with a list of commands which define touch areas and the type of touch - first touch, last touch and continuous touch. Micro Touch screens are available for a range of monitors, sizes and applications.

Price:	£1,250 + VAT
Options:	Tilt and swivel stand, Driver software
Supplier:	CAMERON COMMUNICATIONS LTD.

Touch System

An overlay system that provides IBM PS/2 Model 8513 colour monitors with touch input capabilities. The Touch System is designed for menu-driven applications. Uses analogue resistive technology. Includes a cable and controller.

Supplier: CARROLL TOUCH INC.

Touchtech 501

An infra-red sensitive touch screen with a resolution of 120 x 90 detected points. It has its own on board microprocessor, giving four point modes and four continuous modes to assist in software development. The screen is mounted on a stand and is compatible with Microvitec 'M' series 36cm colour monitors. Touchtech plugs into the BBC serial port and comes with a suite of 9 programs.

Price: £260
Options: Microvitec monitor, software.
Supplier: TOYS FOR THE HANDICAPPED

Micromate

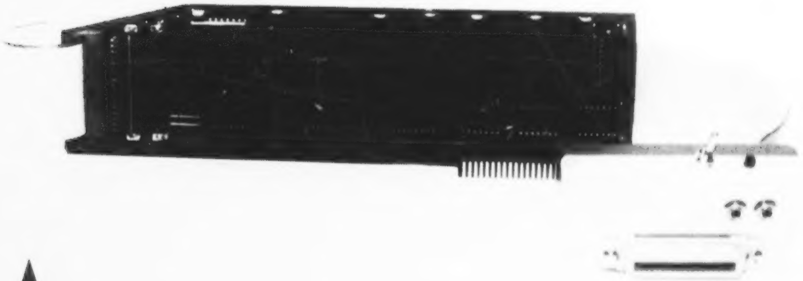
A touch sensitive screen consisting of three perspex panels. It attaches to the front of a standard 305 - 406mm monitor. An interface is required for connection to a BBC computer. Software is available for BBC and Apple computers.

Price: £59.50
Options: Software.
Supplier: TOYS FOR THE HANDICAPPED

Keyboard Emulator

This is a 20cm x 21cm display, computer keyboard emulator, containing a matrix of all characters and commands. The user operates a single switch to control scanning, on reaching the required character/command, a further operation of the switch enters the selection into the computer. An optional 'beeper' provides an audible aid to input. Available for Amstrad and BBC micros - others on request.

Supplier: COURTENAY TECHNICAL SERVICES



Adaptive Firmware Card

Allows physically disabled people to run off-the-shelf software for the Apple IIe, II+ and IIGS using any of 16 input methods. These methods include scanning, morse code, expanded keyboard capabilities, and assisting features for people using the keyboard with one finger or prod. The game paddle emulation enable one or two switch control of many paddle based programs. Slowdown mode gives control of the progression and speed of a program. Switches are not supplied.

Price: US $400-450
Supplier: ADAPTIVE PERIPHERALS INC.

PC A.I.D. (Alternative Input Device)

A keyboard emulator which plugs into the parallel printer port of an IBM PC/AT/XT or compatible. Input methods: regular, step or inverse scanning, single or dual switch morse code and assisted keyboard. Features include key re-definition and message customisation. PC A.I.D. is transparent to most software including graphics applications.

Supplier: AREMCO

PC Serial A.I.D.

A keyboard emulator which plugs into the serial interface of an IBM PC/AT/XT or compatible and which allows connection of one to three switches and any matrix keyboard. Input methods: regular, step or inverse scanning, single or dual switch morse code, assisted keyboard and matrix keyboard. Features include key redefinition, message customisation and customised scan arrays. Speech synthesis is possible in all modes including 'Talking Scanner' and 'Talking Phrase Board'.

Supplier: AREMCO

Neurolink

An input/output access system for people with severe mobility handicaps. Translates very low neurological signals into a form the computer can interpret. The system's only requirement is that the user have voluntary control of some neuromuscular system. Consists of a three electrode EMG, an infra-red receiver which connects to an information card in the computer. Simulates keyboard entry by inputting characters from a scanning array which appears on the monitor. A Morse Code program also provides a facility for faster inputting than using the character selection method.

Supplier: CYBERNETICS

Keyboard Emulator

The emulator connects directly to the BBC B and comes with a choice of software on disc, tape or eprom. It has 6 sturdy but sensitive switches, 4 for editing, 2 for caps lock and shift lock.

Price: £195-215
Supplier: QED, EASIAIDS LTD.

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Freewheel

Freewheel is an optical pointing device for controlling a computer cursor. The operator wears a small, lightweight and cordless reflector (on the forehead for example); movement of the reflector is detected by the optical camera which moves the cursor accordingly. A tripod mounted sip/puff switch is also supplied; the camera has a 3.5mm jack, compatible with many input switches. The camera plugs into the serial or mouse port of any Apple, IBM PC, or compatible computers. Freewheel comes with Screenkey software which is a user configurable on-screen keyboard emulator. Screenkey can overlay almost all software packages and offers features such as "common word" which speeds up input.

Price: US $900
Supplier: POINTER SYSTEMS INC.

Tarka

A scanning keyboard emulator for switch users. Tarka connects to the user port of BBC computers (not the Master Compact) and a single or dual switch or joystick connects to the analogue port. There are six scans: 4 for single switches and one each for dual switches and joysticks; wide range of scanning speeds. A 128 word phrase bank can be stored on disk and a default word bank of 128 words is supplied.

Price: £173
Supplier: 3SL LTD.

Beeb Control

A scanning keyboard emulator for BBC computers, operated by one or two switches. It is software transparent, models are available for the BBC B and BBC Master.

Price: From £499
Options: Additional interface, switches (including infra-red remote control).
Supplier: ELFIN SYSTEMS LTD.

Multi Access Package

A complete access package, for severely disabled individuals, which includes ezMorse, ezScan, and Keyboard Expander. Each of these products can also be purchased induvidually. EzMorse is a specially designed Morse Code keyboard emulator that uses basic military codes, with mnemonic codes for other keyboard keys. Features include instant help screen, single switch/double switch or joystick access, tutorial on disc, cable for serial or game port. EzScan program involves a set of window layouts that allow the user to have complete control through single or double operation. Keyboard Expander is a hardware/software combination. An adapter card is provided. All keys are redifinable.

Supplier: REGENESIS

Regenesis Breath Switch

A lightweight, electronic dual input switch to access a computer (Apple IIe, IBM PC, AT, XT) through the game port or an environmental control unit. This is a sensitive switch not affected by saliva, for use by persons with little head movement and good lip closure and those dependent on a ventilator. Emulation software available.

Price: CAN $150
Supplier: REGENESIS DEVELOPMENT CORPORATION

C.I.D.

The Coded Input Device is a keyboard emulator operated by two switches, e.g. suck puff switch or two paddle switches. The switches are used to generate a morse code, which consists of beeps at two different tones. CID converts the code to ASCII and transmits this to the computer through its serial port.

Supplier: ELFIN SYSTEMS LTD.

Keymaster

A switch operated computer keyboard emulation system. The special interface allows a wide range of switch types (single or dual) to make selections from an on screen keyboard (a second monitor is required). There are nine speed settings and typing speed can be improved with the use of Predictive Typing software. Joystick and speech control systems are also available.

Supplier: CLWYD TECHNICS LTD.

Proportional Keystroke Scanning

Plugs directly into an electronic typewriter or can be used to replace or augment a computer keyboard. Sip and puff or a joystick can be used as the control mechanism. Keystrokes are generated by moving the cursor along a row to the desired character. The cursor is moved from rest as a vacuum is developed in the mouth. More vacuum results in faster cursor movement. The electronic signal is sent to the computer or typewriter when the operator puffs gently. All standard keystrokes are available.

Supplier: ABILITY SYSTEMS CORPORATION

MOD Keyboard

Manufactured by TASH, this is a firmware cartridge that forms the basis of a keyboard emulating system. The system comprises the cartridge, a Commodore VIC 20 and a monitor. One, two and multiple switch access for row, column, step and directional scanning, are available as well as access through one and two switch Morse code. With the appropriate connection cable the system will work with IBM PCs and compatibles, Apple II series computers, Commodore 64C and 128.

Price: On application
Supplier: Aremco

MC/PC Keyboard Emulator

Allows 2-switch Morse code to be used to operate the IBM PC in place of the keyboard. All keyboard functions may be generated via Morse code. All special functions, keys (SHIFT, CTRL, CAPS, LOCK, ALT), and function keys may be accessed via Morse code. Operates in parallel to the keyboard electronically - normal keyboard operation is not disrupted. Standard software may be accessed via Morse code. Morse code keyer rate may be adjusted by the user. MC/PC does not have any message retrieval capability. Consists of a plastic box containing electronic circuitry and connectors which are installed on-line between the computer and the detachable keyboard.

Supplier: ADAPTIVE PERIPHERALS INC.

Photonic Wand

The wand enables a physically disabled person to operate a BBC microcomputer by head movement only. The user wears an optical sensor attached to a helmet or spectacles and the screen cursor moves in response to head movement. Software is provided for on screen keyboard emulation, WRITE, PAINT and MUSIC programs are also included. Software is available for the BBC Master 128, Master Compact, Model B and B+. The wand works best with a colour monitor, minimum size 36cm.

Price:	Miniature version	£120
	Helmet version	£105

Supplier: THE PHOTONIC WAND CO.

TurboSelect

A keyboard and mouse emulator designed for people with physical limitations. Replaces standard input devices (keyboard and mouse), and provides a means of accessing a computer. Morse Code, Scanning, and Direct Select can be used simultaneously to optimise the abilities of the user.

Price: US $2,795
Supplier: VENTURE TECHNOLOGIES INC.

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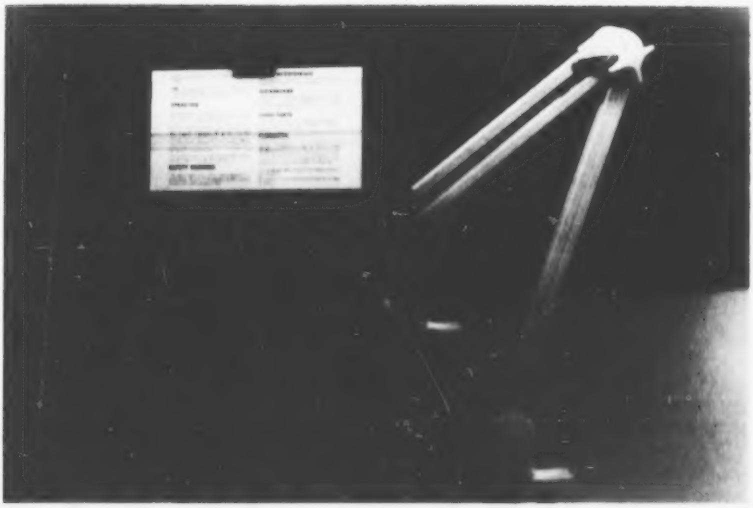
echoBOX SMART Keypad

The echoBOX is a user definable keyboard macro storage device which can store up to 24 macro commands of maximum length 650-950 keystrokes (depending on model). It simply plugs into the keyboard line of an IBM PC or compatible and can be used with any PC program. The echoBOX is available in a modified form with the shift key changed to a toggle switch and/or the run/pgm switch changed to a rocker switch.

Price: US $189.95 for PC & XT
$219.95 for AT
$264.95 for PS/2
Supplier: INMAR INC.

echoBOX
HELP
SAVE



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MALTRON Mouth/Headstick Keyboard

Designed with a curved front to match head movement, this unit may be mounted on an articulated arm for head or mouth stick operation, or it can be placed on a table for single finger or stick use. This keyboard also has a letter layout designed to reduce movement. It is based on the concept of a circular motion, starting and ending with a Space key at the bottom centre position. This also applies to the number row which is split to give the most used numbers 1 & 0 either side of Space. Essential for single finger operation are push on and push off keys fitted to operate Control and Shift.

Price:	IBM PC & compatibles £295; BBC Master £225; BBC £175
Options:	Articulated arm, table clamp and keyboard support
Supplier:	PCD MALTRON LTD.

Maltron Single Handed Keyboard ►

The MALTRON Single Handed Keyboard has been developed as a logical step forward from the standard MALTRON keyboard. The letter layout of the keyboard has been designed to meet the needs of single handed operation, taking into account the limited number of keys which can be accessed comfortably.

Price: IBM PC & compatibles £295; BBC Master £225; BBC £175
Option: Training Manual
Supplier: PCD MALTRON LTD.

Ergonomic Keyboard ►

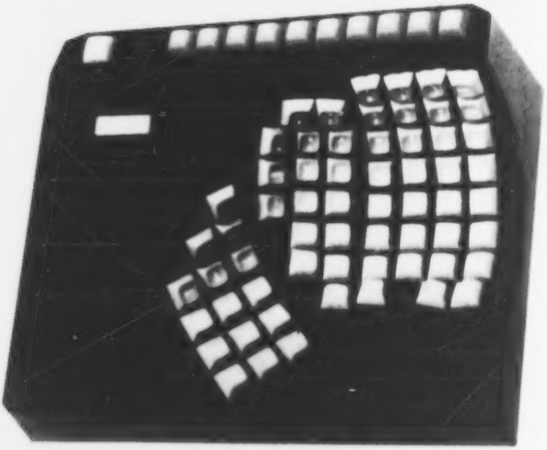
The Maltron Ergonomic Keyboard is designed to increase comfort and reduce fatigue for the operator. The keys, which are shaped to fit the fingers, are divided into two well separated main groups; between these two groups are keys which are allocated to the thumbs.

Price: IBM PC and compatibles £295; BBC Master £225; BBC Micro £175
Options: Training manuals and audio tapes.
Supplier: PCD MALTRON LTD.

Mini Keyboard

A programmable miniature keyboard requiring a small range of motion to access entire keyboard area. Only 100 grams of force needed to activate keys. Measures 19 cm x 15 cm x 3 cm and is compatible with all software programs through the correct interface card.

Supplier: COMPUTABILITY CORPORATION



Smartboard

A programmable keyboard for use with IBM PCs and compatibles. Each function key can represent up to 126 characters and the keyswap facility enables a customised layout of keys to be designed and stored. The Smartboard comes with a built in Smartball - a mouse type cursor.

9.1

Price: US $395 + shipping
Supplier: ARTS COMPUTER PRODUCTS INC.

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Remote Keyboard for the Apple II+ and IIe

These keyboards are designed to give quadriplegics and other severely disabled persons complete access to Apple II+ and IIe computers. They are standard Apple keyboards with 2.44mm long cables and with locking switches on those keys required to be held down at the same time as another key. They can also be fully operated by joystick, head stick, mouth stick or one finger or stylus. The keyboards have an adjustable bracket and can be mounted in any position.

Price: US $75
Supplier: EKEG ELECTRONICS CO. LTD.

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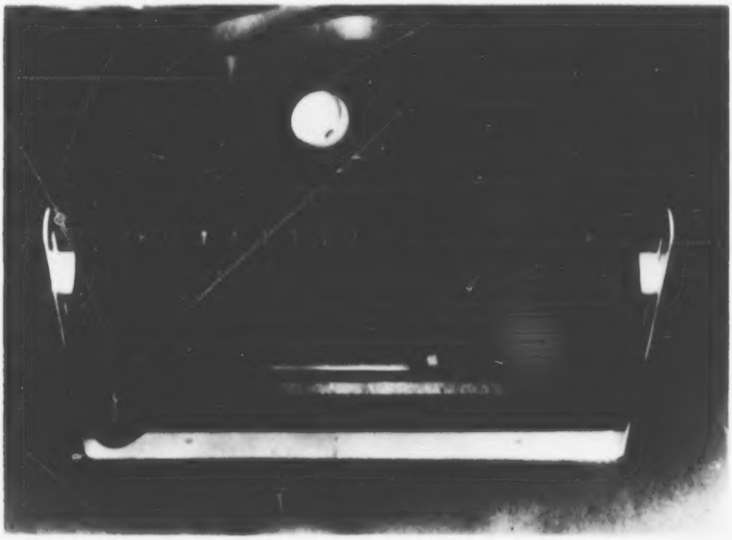

Expanded Keyboard for the IBM PC

This keyboard can be operated with one finger and the keys require light pressure to activate them. An audible click is available on each key press; the delays and the repeat rate are all adjustable. Keyboard size 356 x 610mm, keysize 38mm square. A 2.44m cable is supplied, the device simply plugs into the keyboard socket in place of the regular keyboard. Superkey software is required.

Price: US $50
Options: Superkey software.
Supplier: EKEG ELECTRONICS CO. LTD.

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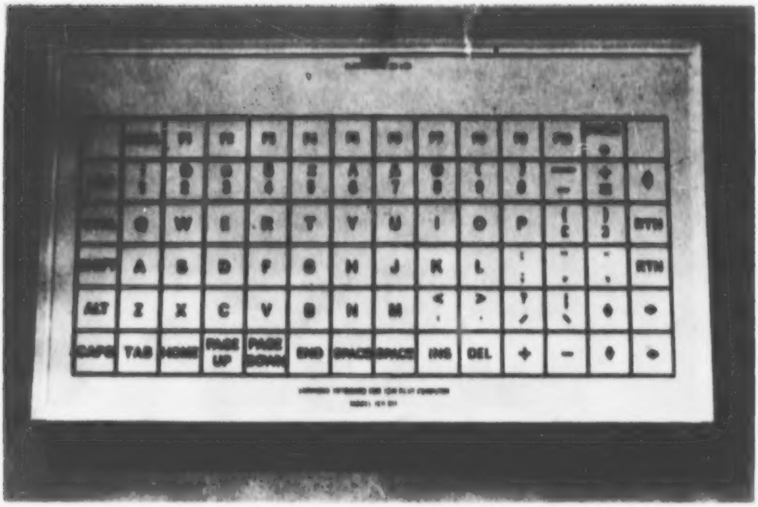

Q W E R T Y U I O P
A S D F G H J K L
RTN
ALT
Z X C V B N M
CAPS
TAB
HOME
PAGE UP
PAGE DOWN
END
SPACE
SPACE
INS
DEL

Expanded Keyboard for Garid Personal Communicator ►

This expanded keyboard consists of a 305 x 457mm board which connects to the Garid Personal Communicator. The keys which are 38mm square, require only a light touch to activate and produce an audible and tactile click upon pressing. The expanded keyboard requires no power supply or other connections.

Price: US $575 (does not include Communicator)
US $75 Keyguard
Options: Personal Communicator.
Supplier: EKEG ELECTRONICS CO. LTD.

Expanded Keyboards for the BlissApple Program ►

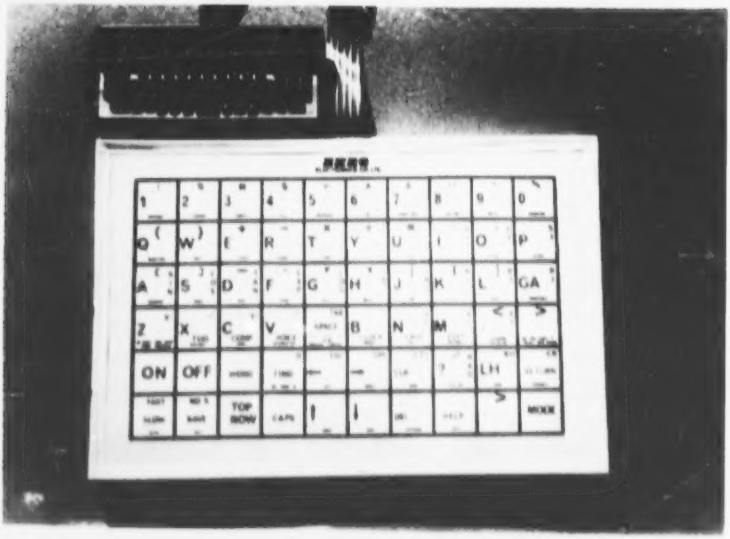
These expanded keyboards for use with the BlissApple program work with the Apple II+, IIe and IIGS computers. They are designed for multiply handicapped, non verbal users. Two sizes of keyboard are available, one with 220 25mm squares and one with 512 22mm squares. The keyboards are 25mm thick, waterproof and have a clear plastic cover. The Bliss synbol overlays are placed under this reusable cover. When the symbol is pressed, it appears on the screen, is spoken by the voice synthesiser and may be printed. A copy of the BlissApple program is provided.

Price: US $850 and $975
Options: Super serial card, Voice synthesiser (serial), Printer, Cables.
Supplier: EKEG ELECTRONICS CO. LTD

Narwhal Board ►

A 48 or 128 key expanded keyboard for use with the Adaptive Firmware Card and an Apple II computer, or with the PC Serial Aid and an IBM PC. Designed for use with overlays, this is not a membrane keyboard - the keys move physically and provide tactile feedback. There are no dead spaces between keys or key groupings. Key size = 25mm square.

Price: US $25 - 40
Options: Adaptive Firmware Card, PC Serial Aid.
Supplier: EKEG ELECTRONICS CO. LTD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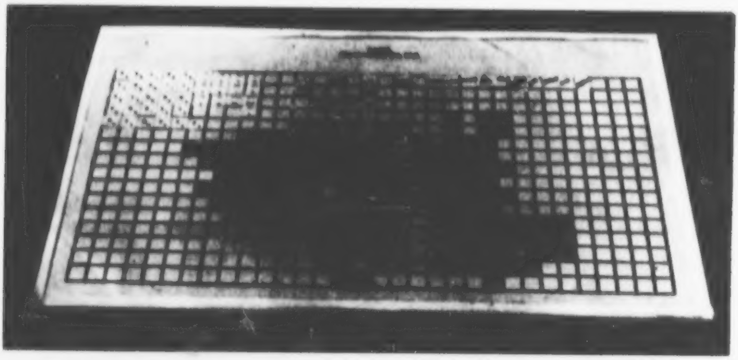
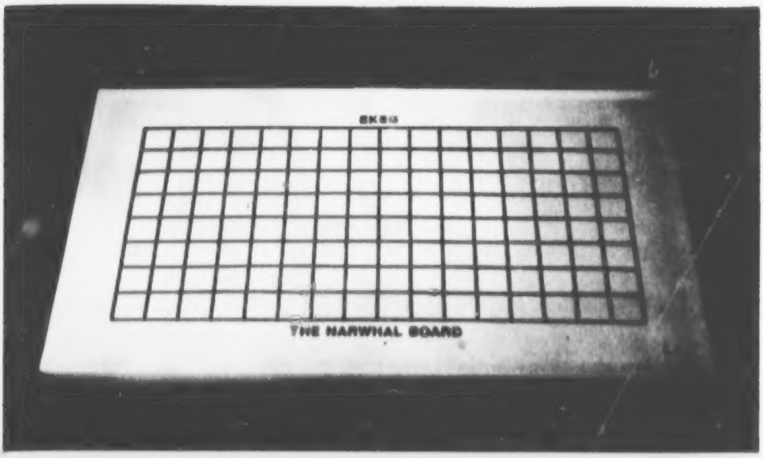
CAPS




THE NARWHAL BOARD

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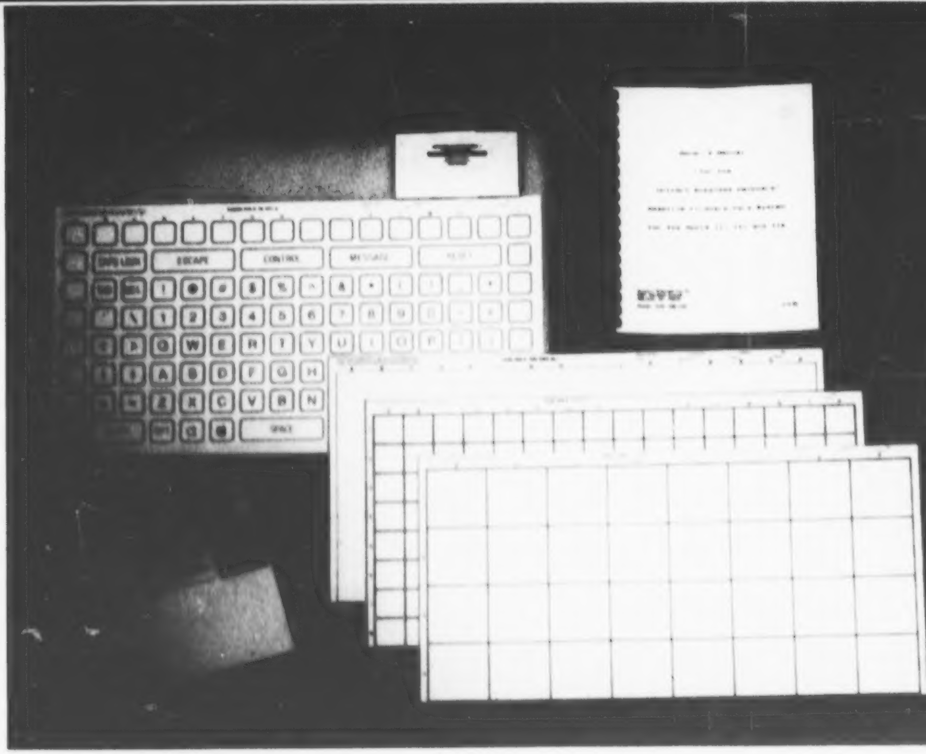

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Unicorn Expanded Keyboard II

An alternative computer keyboard for people who would benefit from larger keys or a customised arrangement of the keys. It permits use of most commercial Apple and IBM/MS-DOS software and full computer use with one hand or a headwand. The keyboard is a smooth, flat panel with 128 touch sensitive areas or keys. Keys are labelled through interchangeable paper overlays placed beneath the transparent plastic cover. Number, arrangement and size of keys can be varied. Each key can be defined to be a single character or an entire message.

Price: US $325
Options: 64 and 128 hole keyguards, Up and Running (software).
Supplier: UNICORN ENGINEERING Co. LTD.

Keyport 300

A flat membrane touchpad with 300 programmable keys. Each key is 13mm square. Overlay sheets can be placed on the membrane surface to identify the programmed keys. Plugs into the game port of IBM PCs and compatibles.

Price: US $195
Supplier: POLYTEL COMPUTER PRODUCTS CORPORATION

Keyport 60

The Keyport 60 is similar to the Keyport 300 but only has 3 rows of 20 keys.

Price: US $119
Supplier: POLYTEL COMPUTER PRODUCTS CORPORATION

Plug Compatible Keyboards

Keyboards which function like their counterparts but offer different layouts. Features offered include: function keys along the top of the board; separate cursor and numeric keypads; different locations for some of the non-character keys; Dvorak layouts; one-finger typing adaptations. Available for IBM PC, XT, and PCjr. Some models have special handicapped versions available.

Supplier: KEY TRONIC

Electronic Touch Pad

This is an A1-sized touch sensitive panel with 225 switches, which plugs into the BBC computer. Artwork or other pictures can be placed on the board, making it an input method for interactive learning/training. The price includes the Touch Pad, software, a BBC interface, backing board and carrying case.

Price: £250
Supplier: CRYSTAL PRESENTATIONS LTD.

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WHAT'S YOUR
S?ORT
WHAT'S YOUR
S?ORT
Milk for Sport for all

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Ten Key Board

A multi-function expanded keyboard for the Apple IIc, IIe and II+. It has 10 x 51mm squares and a larger return.
Dimensions: 254 x 305mm, 25mm thick; weight 450g. It uses overlays in a number of ways: 1, Nine symbol direct access Bliss board for low functioning persons; 2, Large vocabulary Bliss board for high functioning persons; 3, Ten symbol direct access communication board for low functioning persons; 4, Sophisticated communications board for high functioning persons; 5, Direct access logo board.

Price: US $250, keyguard $35
Supplier: EKEG ELECTRONICS CO. LTD.

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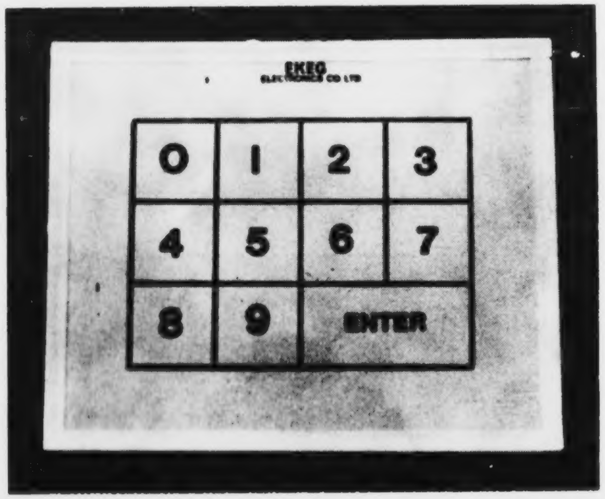

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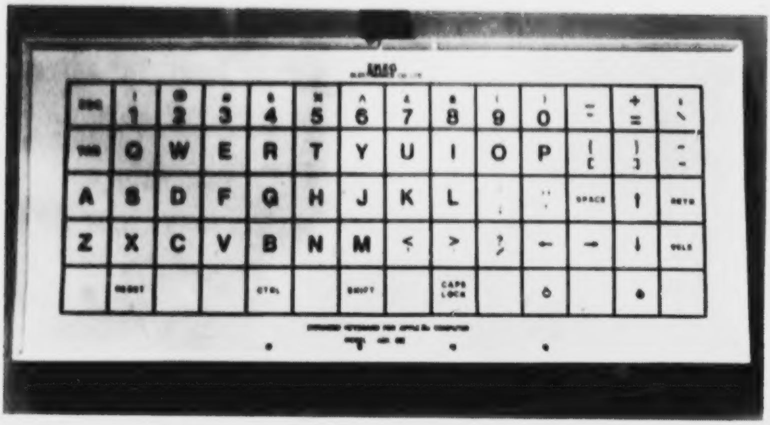
EKEG
1 2 3 4 5 6 7 8 9 0
Q W E R T Y U I O P
A S D F G H J K L
SPACE
Z X C V B N M
CTRL
SHIFT
CAPS LOCK

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Expanded Keyboards for Apple Computers

Designed to give access to the II+, IIe and GS, these keyboards measure 305 x 610mm with 38mm square keys. The control, shift keys etc have locking switches and the keyboard has a peel back cover for the insertion of overlays. An 8' cable is provided and the regular keyboard can still be used. Comes complete with an overlay demo disk.

Price: US $75
Supplier: EKEG ELECTRONICS CO. LTD.

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Expanded Pressure Sensitive Keyboard

This large, 28 x 53cm pressure sensitive keyboard allows custom spacing and arrangement of keys. It is activated by a light touch with a variable time delay. It does not interfere with normal use of the computer and runs commercial software without modification.

Price:	Apple II GS	CAN $1090
	Apple II e	$1025
	IBM	$1050
	Commodore PET/CBM	$850
Supplier:	CACTI COMPUTER SERVICES	

Keyboard Adaptor

A plug in board for the BBC Master which converts the shift and control keys to latching keys. The adaptor enables someone who is unable to hold down two keys simultaneously to run most software.

Price: £60
Supplier: ELFIN SYSTEMS LTD.

PC-Pedal

Allows one handed operation of the PC. It provides a means of duplicating the Control, Shift and Alternative keys with an external switch (normally a soft pedal but any open/close switch can be used). The enhanced version allows any key to be duplicated. The pedal uses the parallel port of IBM PCs and compatibles and operates with most application programs.

Price:	Standard version (with pedal) US $59.95
	Enhanced version (with pedal) $79.95
	Special version (with line jack for use with other switches) $49.95
Supplier:	BROWN & CO. INC.

Touchdown Keytop\Keyfront Kits

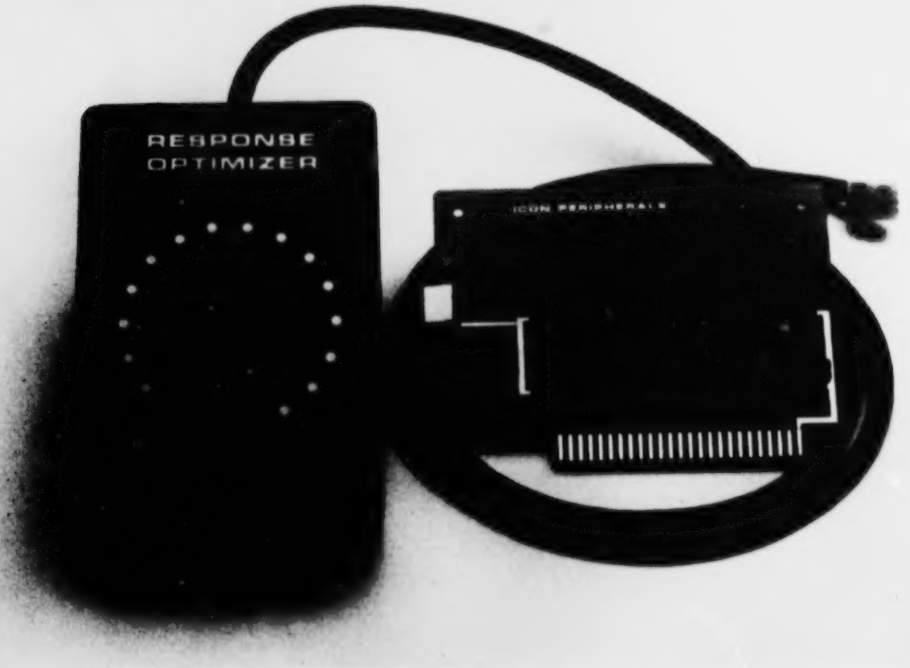
Designed to customise a keyboard to the software, emulation mode or language being used or enlarge the symbols on the alpha and numeric keys of a typewriter or computer. Keytops are cut to fit exactly and are imprinted on the underside to prevent wear. Custom keytops can be made to order or the following are available: emulation kits; word processing kits; Dvorak conversion kits; accounting/spreadsheet kits; language kits; and speciality kits (Braille).

Supplier: HOOLEON CORPORATION

Dreamer

An alternative input device on which the keys can be programmed or customised. The CTRL, ALT, SHIFT keys are toggled so they remain "on" or "off" when pressed. For cancellation of the present state of the toggle keys they are pressed once. The Dreamer measures 17cm x 30cm and is used in addition to the existing PC keyboard. A numeric keypad is also contained on the Dreamer. The PC keyboard and Dreamer are daisy-chained.

Supplier: T. S. MICRO TECH INC.



Response Optimizer

A single circuit board and control box that plug into an Apple II, II+, IIe or IIGS allowing timed responses to be varied on educational or recreational programs, thereby giving the user more time to make a better decision

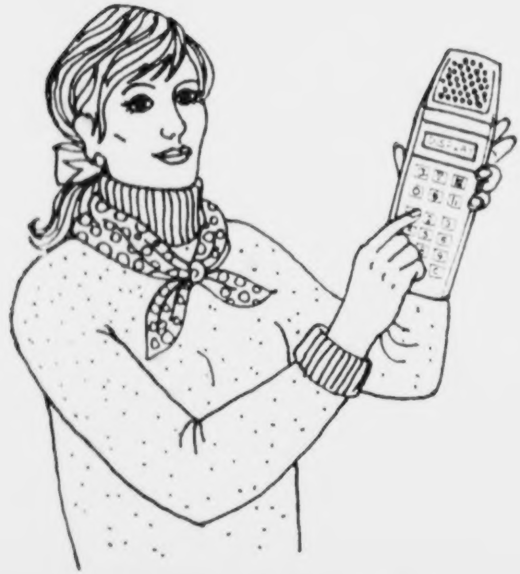
Price: US $101.95 inclusive
Supplier: ICON PERIPHERALS INC.

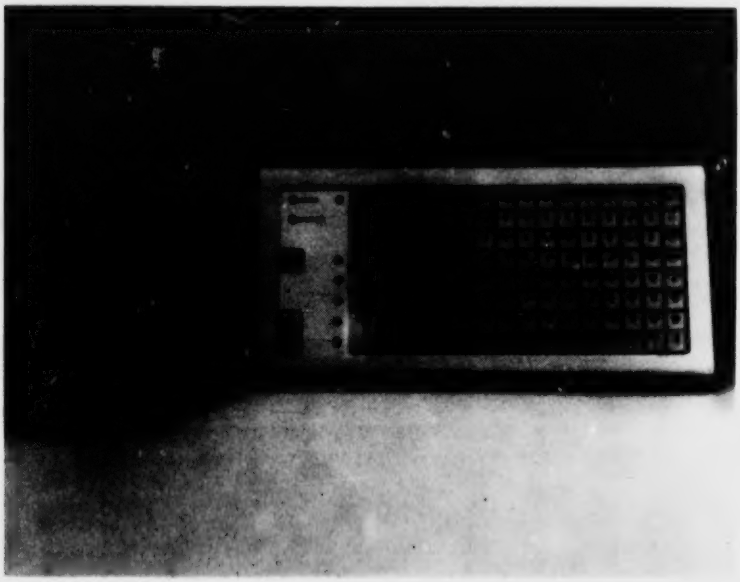
SLOMO

A computer peripheral which gives control over the speed of a computer program/screen display. SLOMO plugs directly into the computer and features freeze frame and slow motion buttons as well as a speed selection dial.

Supplier: NIDD VALLEY MICRO PRODUCTS LTD.

COMMUNICATION AIDS





Portable Spokesman

The Falck 3310 is a portable digital speech aid with a keypad, loudspeaker and 10 character display. It comes with a starter vocabulary of 162 speech elements (sentences, words and figures). Messages can be accessed at a single keystroke or a sequence of speech elements constructed and then spoken. Additional, custom vocabularies can be ordered. Powered by a rechargable battery. The Spokesman can also be operated using switches.

Option: Table top unit for holding the Spokesman, recharging the battery and for using with the telephone.
Supplier: FALCK PRODUKTER A/S

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Phonic Ear VOIS 136

The Phonic Ear VOIS 136 is a microprocessor based portable speech output communication aid for persons who are non verbal. It features unlimited vocabulary, extensive memory and selectable voice quality.
The VOIS 136 incorporates a 128 key membrane keyboard with phoneme based speech synthesis providing personal vocabulary storage of over 12,000 entries on four levels. Individual keys can be combined to form any size target area. A 500 entry talk buffer allows editing and speaking of all desired messages.
Saving a user's entire program, loading new software programs, and configuring for different users can be accomplished with cassette data transfer. The unit incorporates a carrying hand, adjustable stand, and provisions for mounting to trays or lapboards.

Price: £2600 complete
Supplier: PC WERTH LTD.

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CATT

The CATT Model 525 is a hand-held, programmable, synthesised speech communication aid. The CATT has two memory sections: 64K read only memory which contains a library of words/phrases programmed in the factory (to the client's specifications if required), the second memory area is programmed by the user through the 15-key keyboard. Memory is arranged in topical levels and overlays are provided for reference. Powered by rechargable battery or mains.

Option: Keyguard
Price: US $595
Supplier: MEDICAL TECHNOLOGY SYSTEMS, INC.

Trine (Equaliser)

A three function communication aid : a portable electronic notebook; a communication aid with printed or synthesized voice output and an alternative input to a general purpose computer. Function changed with a single keystroke. Equipped with a standard keyboard; an 80-character LCD display; a built-in strip printer and Trine software. Text can be composed in 6 work spaces, each holding up to 55 lines of 20 characters and retaining their memory when power is off. Text can be reviewed on the display, printed or stored on microcassette.

Supplier: ADAPTIVE COMMUNICATIONS SYSTEMS INC.

D.A.V.E.

The Digitally Aided Voice Emulator is a portable, rechargeable battery operated communication aid in which 16 two second messages can be stored and then recalled using a single switch. D.A.V.E. records and replays a digital representation of speech, so output sounds more natural. TD1, the table top version has a scanning display built into the main case; TD2, the wheelchair mounting unit, has the scanning display mounted on a flexible gooseneck.

Price: TD1 £425 + VAT; TD2 £475 + VAT
Supplier: QED LTD.

ZYGO Parrot

The Parrot is a portable, battery powered communication aid in which spoken messages are stored and recalled by electronic (digitised) recording. It works on the same principle as D.A.V.E., but is designed for people who can operate membrane switch keys. Parrot gives 16 message addresses and 32 seconds of recording time - no limit to the percentage recorded at one address.
Size: 133 x 102 x 38 mm. Weight: 370g

Price: £385 + VAT
Supplier: QED LTD.

Myovoice

A battery powered communicator in which phrases up to 8 seconds duration may be recorded using a microphone. The playback of phrases/messages is a digitised, human quality version of what was originally spoken. Three models are available, each accessing the stored speech in a different way: integral low pressure keypad 150mm square divided into 2 - 40 areas, a Concept Keyboard may be used, and Myovoice with an integral scanning keyboard for switch users.

Price: From £950
Options: Spell mode, display, Concept Keyboard, switches, wheelchair mounting.
Supplier: ELFIN SYSTEMS LTD.

Speech Aid

A portable communication aid that provides synthesized voice output of letters, words and phrases typed on the keyboard. Comes with eighty pre-programmed commonly used phrases recalled with combinations of two keystrokes. User can also store custom messages recalled with a single keystroke. It has a 64-pitch inflection control. Can speak musical tones in a five-octave range. Comes with an RS-232C serial interface for output to a printer or computer.

Supplier: INTEX MICRO SYSTEMS CORPORATION

Say-It-All II Plus

A flexible, speech output communication device. The Say-It-All is designed to take account of the changing communication needs of the user and for institutions with multiple users. The unit adapts to user defined symbol based communication systems, such as Bliss Symbols and Touch and Talk stickers and offers 846 user definable phrases. Other features include: 8 voices ranging in pitch, audible keypress feedback and a connector for a printer or computer. Price includes battery charger, overlays and stickers.

Price: US $1350
Options: LCD, keyguard, overlays, shoulder strap
Supplier: INNOCOMP

Say-It Simply Plus

A speech output communication device for motor or cognitively impaired people. Features: 618 user definable phrases, 27 message environments, 31 x 31cm touch activated panel, size of active area selectable down to 25 x 25mm, 8 voices ranging from low to high pitched. As with the Say-It-All II Plus, it can be used with communication symbol systems and customised overlays. Price includes battery charger, overlays and stickers.

Price: US $1350
Supplier: INNOCOMP

Intro Talker

A digitized speech voice machine for those who can press buttons. Intro Talker can hold up to 8 minutes of pre-recorded speech and can be used as an introductory device for some non speaking people. As many may want to progress to Touch Talker, Liberator offer up to 80% trade in on Intro Talker.

Price: £495
Supplier: LIBERATOR LTD.

Touch Talker

Touch Talker is a portable voice machine for non speaking people who can press buttons. It uses Minspeak, a symbolic language that enables the user to recall any of up to 1500 sentences which can be held in the machine.
The symbolic language allows message recall with typically 60% reduction in the number of key presses required by most forms of voice machine.

Price: From £2044
Options: Printer and wheelchair mounting kits.
Supplier: LIBERATOR LTD.

Light Talker

Light Talker is a portable voice machine for non speaking users who cannot press buttons. It comes with a full range of switches to suit most requirements. It used Minspeak, a symbolic language that enables the user to recall any of up to 1500 sentences which can be held in the machine.
The symbolic language allows message recall with, typically, 60% reduction in the number of key presses required by most forms of voice machine.

Price: From £2500
Options: Switches, mounts, printer.
Supplier: LIBERATOR LTD.

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Cludius Converse

A portable speech synthesiser. Consists of a keypad which connects directly to the telephone which can speak up to 64 phrases, including emergency messages in either a male or female voice. It can also be used for face to face conversation.

Supplier: A.P. BRESSON

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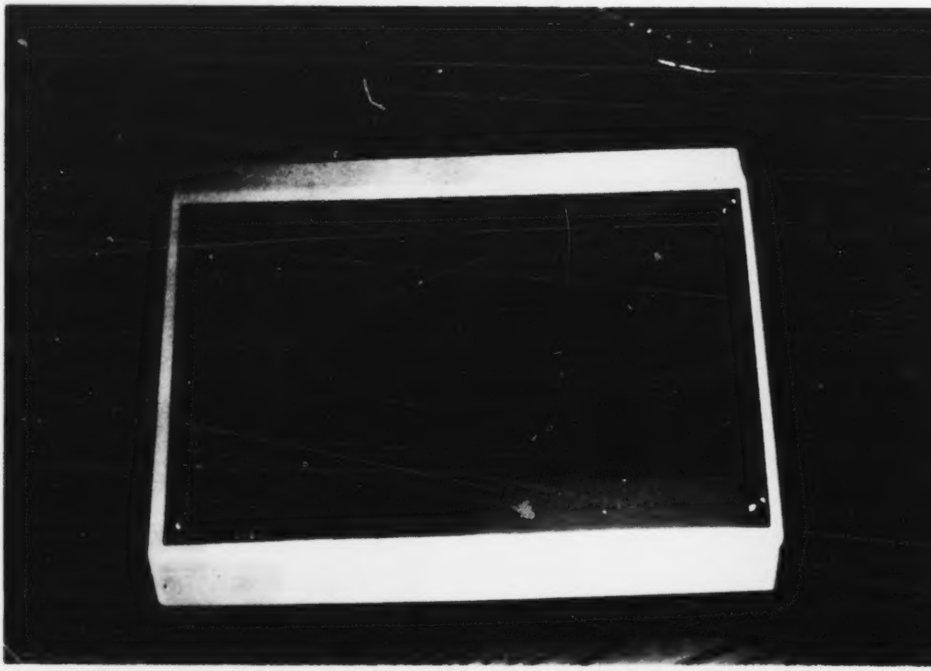

ZYGO Talking Notebook

The Notebook is an education/communication aid with text-to-speech and an integral modem. It is a portable PC and word processor with a 40 column, 8 line LCD screen. It offers single pointer access to all multikeystroke functions and tailored file storage of preferred vocabularies. An EXCEPTIONS file allows phonetic spelling for correct pronunciation. Software includes talking scratchpad, maths scratchpad and clock/calendar.

Price: £1820 + VAT
Supplier: QED LTD.

EyeTyper 300

The EyeTyper 300 is an eye gaze controlled keyboard system that measures the reflection of an infrared light on the cornea relative to a reflection on a "target" worn on the face of the user just below the eye. By directing the eye toward specific fields on the face of the unit, the user can select a letter, word, phrase or picture. The selection is then displayed on a large type, 40-character, single light display bar and spoken by the built in speech synthesizer. The EyeTyper is both a communication aid for the non vocal and a replacement for the keyboard of a personal computer for a severely handicapped person.

Price:	US $3495
Options:	Keyboard emulator, external keyboard, environmental controller, positioning clamps.
Supplier:	SENTIENT SYSTEMS TECHNOLOGY INC.

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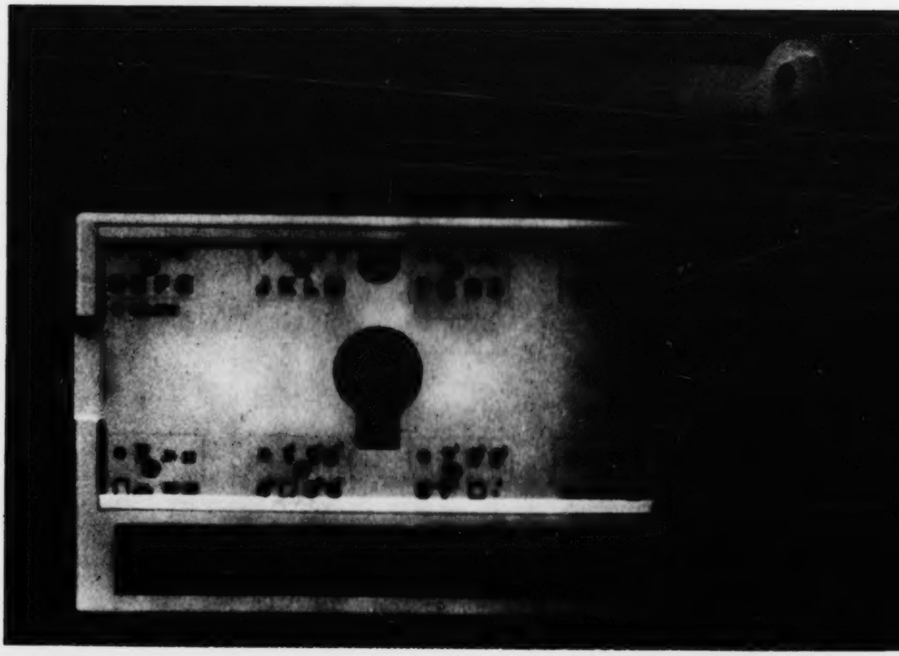


Magic Wand And Tiger Jr.

The Magic Wand is a portable speech output device designed as an augmentative communication aid and educational tool. It uses a hand held fibre optic wand scanner which decodes the speech sounds encrypted in the Talking Tracks bar codes. There are 128 speech segments, called allophones, which are synthesised to produce robotic speech through the built-in speaker. The 56 pages of bar codes and associated icons in Tiger Jr. contain a basic survival vocabulary of 370 words. The pages are colour coded according to semantic groupings (eg feeling states, clothes, food, etc.) and can be photocopied and enlarged.

Price: US $150
Options: Tiger expansion vocabulary (940 words)
Supplier: TIGER COMMUNICATION SYSTEM INC.

Alltalk

A human voice speech output communication device. The user can customise and program selections with human voice output. Output is activated by touching positions on the membrane surface, one position is able to represent up to 8 words and the size of each position can be defined. Programs can be stored on a standard cassette player. Included are: microphone, overlays, tape recorder, blank tapes, rechargeable battery pack. Two sizes are available: 406 x 508 x 51mm and 279 x 381 x 51mm. Each size of Alltalk is available with either a 600 word memory and 128 selection positions or a 1200 word memory and 256 selection positions. Made by Adaptive Communication Systems Inc.

Price: £2000 - £2600
Options: 128 and 32 position keyguards.
Supplier: CAMBRIDGE ADAPTIVE COMMUNICATION

ZYGO PACA

The PACA (Portable Anticipatory Communication Aid) is a communication device for single switch users whose repeated actuations are very slow and/or inconsistent. It is based on a lap top PC which has a built-in printer, microcassette drive and LCD. The keyboard is presented on-screen and a scanning cursor offers selections. The system predicts each successive selection, including words from the user's dictionary.

Price: £1060 + VAT
Option: Speech synthesiser
Supplier: QED LTD.

Wolf

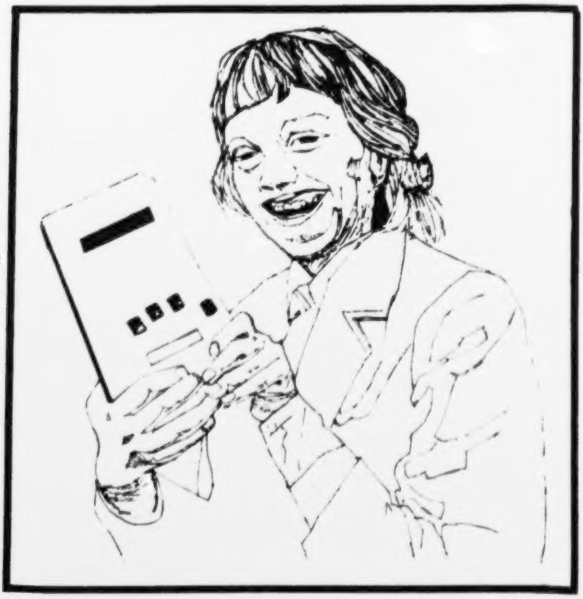
A voice output communication aid housed in a Texas Instruments' Touch and Tell case. Wolf comes with a fixed memory of 500 words - specified on ordering - and a user programmable 800 word memory. An Apple II interface is provided for storing additional vocabularies. Each memory section can be organised according to subject in up to 30 pages. The touch panel is a 6 x 6 matrix of 32mm squares - for use with symbol overlays. A number of switch operated models are also available.

Price: US $275 - $350
Options: Free demonstration vocabulary and overlays.
Supplier: ADAMLAB

Toucan Learning Tray

A membrane surface communication aid designed for single or dual switch users. The surface forms a matrix of 128 cells on which overlays may be placed. The Learning Tray may be used as a switch operated substitute for a Concept Keyboard when connected to a BBC computer running Concept Keyboard software.

Price: £425
Options: Switches, computer, monitor.
Supplier: TOUCAN COMMUNICATION AIDS LTD.



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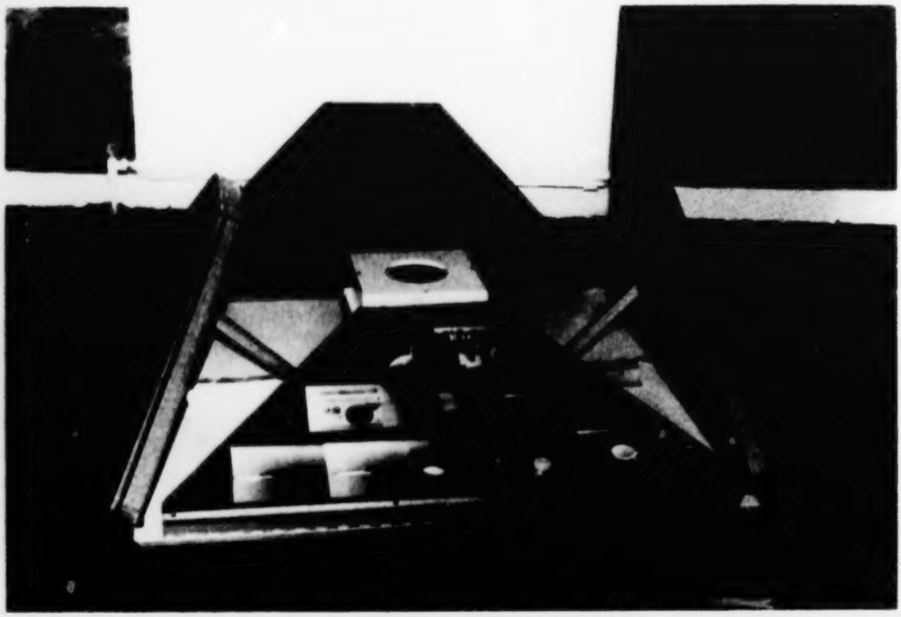
Microwriter

A small battery powered word processor about the size of a paperback book, which is operated with one hand. There is a key for each finger and two for the thumb. Characters are entered by pressing combinations of keys, with the second thumb key being used to enter editing commands and capital letters. It requires less muscular control than handwriting. The editing and layout facilities are powerful and easy to use. The display shows 14 characters at a time. It is available with 8K or 32K of memory (4 or 16 pages of A4 approximately). Battery life is around 20 hours of use per charge.

Modifications: the keys are replaced with lights in a switch operated scanning version; left handed keyboard; custom key arrangements; stiffened keyboard and others on request.

Supplier: FOUNDATION FOR COMMUNICATION FOR THE DISABLED



Pyramid Communication Unit

The Pyramid has four sloping boards, mounted on adjustable stands around a 91cm square with the electronics housed in a centre pad. Each board has 10 large touch panels over which pictures or symbols may be placed. Each panel can be programmed to give a spoken response when touched. The Pyramid is a stand alone unit, but it can be used in conjunction either with the Myovoice Talking Communicator or a BBC B with disk drive, monitor and speech synthesiser (software is supplied for use with the BBC).

Price: £380
Supplier: COMMUNICATIONS FOR THE HANDICAPPED

Wall Mounted Communication Board

The board measures 1.52 x 0.61m and is designed for wall mounting. It has 33 touch panels over which pictures/symbols may be placed. Each panel can be programmed to give a spoken response when touched. The Communication Board will work with the same equipment as the Pyramid Unit.

Price: £299
Supplier: COMMUNICATIONS FOR THE HANDICAPPED

Cannon Communicator M

A portable communication device featuring an A-Z keyboard and integral thermal dot printer. Keys A to E each serve as an address for storage of up to 19 characters. Size: 131 x 85 x 30 mm. Weight: 260g. The communicator is supplied with a keyboard cover, carry case, neck strap, rain cover, battery pack and charger, tape rolls.

Options: Interface unit, wheelchair attachment, armbelt
Supplier: CANNON (UK) LTD.

Microscribe

A small battery powered terminal with a text editor. It is very light and robustly made, measuring about 140 x 190mm. The keys are smaller than a standard keyboard. The display shows two lines of 40 characters at a time, but printing can be to any width. As a terminal, it can be used to send pre-prepared text, or to capture incoming text in its memory. It is available in 8K and 32K versions. Battery life is around 150 hours of use per charge.
Modifications: single finger and mouthstick versions.

Supplier: FOUNDATION FOR COMMUNICATION FOR THE DISABLED

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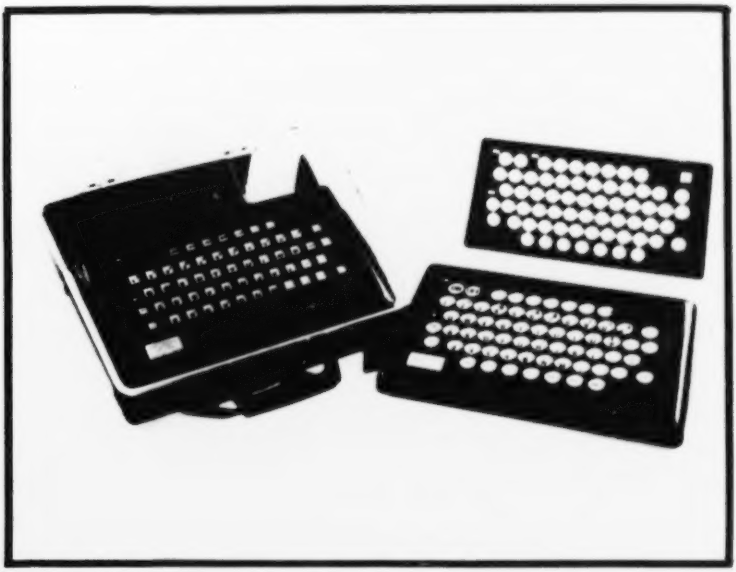

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Lightwriter

A portable communication aid which has a QWERTY keyboard and two 20 character displays. It has 45 fixed memories for everyday use plus 40 keys to programme in user phrases - capacity 10,000 characters. The Lightwriter also functions as a basic calculator.

Price:	From £623
Options:	Internal or external printer, speech synthesiser, ABC keyboard, keyguards, scanning version.
Supplier:	TOBY CHURCHILL LTD., EASIAIDS LTD.

Mardis Orac

This is a portable speech communication aid that incorporates two independent speech synthesis systems and provides both a 128 key keyboard and scanning LED system in the same device. Orac allows direct use of the keyboard to speak words or phrases and the scanning method allows access to the same keys via simple switches, joysticks, etc. Concept/Cheshire keyboards etc. can also be used.

The digitally recorded speech system (via a microphone) gives high quality speech for words and phrases and many options on variable speech length. The phoneme speech system gives unlimited vocabulary with text-to-speech.

Price: £600 approx.
Options: Portable 3.5" disc drive and interface
Supplier: MARDIS

NOT TONIGHT I'VE GOT A HEADACHE

'You don't even talk to me any more'.

MULTI-PURPOSE SPEECH SYNTHESISERS

61

Echo Commander

The Echo Commander is a speech synthesizer designed to operate with the Apple II+, IIe, or IIGS computers. This device allows many public domain and non copy protected programs to talk. The Echo Commander includes an interface card which plugs into one of the computer's expansion slots; an external speaker box with knob controls for rate of speech and volume and a headphone jack; a 5 1/4 inch floppy disk containing a specially modified version of TEX-TALKER, a program which works in the background allowing other programs to speak; TEX-TALKER documentation in large type, Braille, and on the program disk; and Echo Commander installation instructions to print.

Price: US $184.10 (subject to change without notice)
Supplier: AMERICAN PRINTING HOUSE FOR THE BLIND

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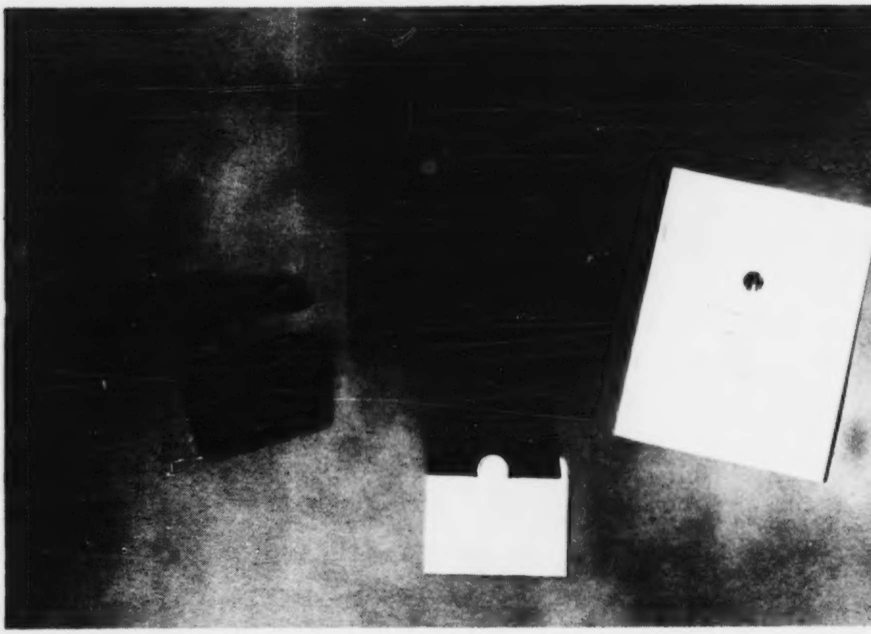


Echo Speech Synthesiser

The Echo Speech Synthesiser offers both text-to-speech and natural speech capabilities in a plug-in style board. Its text-to-speech program gives the computer an unlimited vocabulary. Over 400 rules of the English language are utilised to produce intelligible robotic sounding speech. The Echo also features a fixed vocabulary (supplied on disc) in a distinctive natural sounding female voice. It is addressed like a printer, all text directed to the Echo is spoken. Comes with external speaker with volume control and headphone jack, manual and speech utilities on disc.
Echo IIb - Apple II+,IIE and IIGS
Echo 1000 - Tandy 1000 EX and HX
Echo PC+ - IBM PC,XT,AT and compatibles
Echo+ - Apple IIe and II+ also features sound and stereo music synthesis
Echo MC - IBM PS2 models 50 and 60

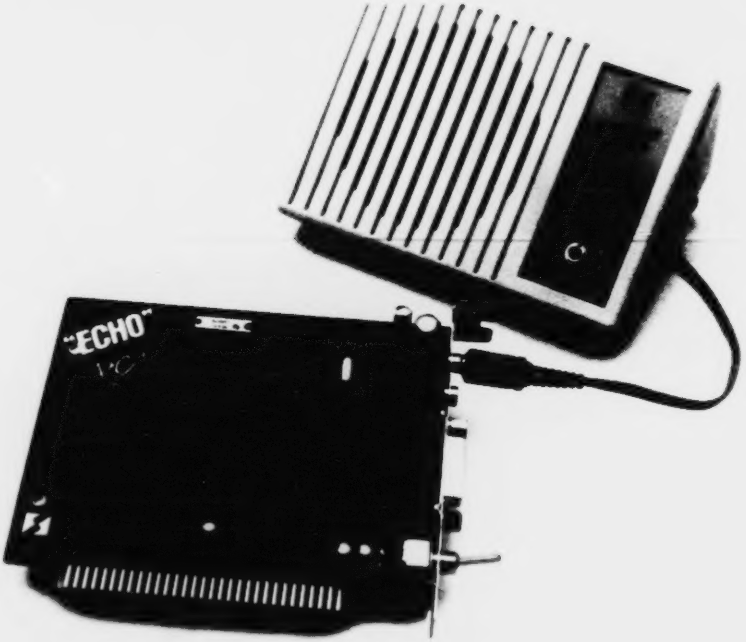
Price:	Echo IIb	US $129.95
	Echo 1000	US $149.95
	Echo PC+	US $179.95
	Echo+	US $179.95

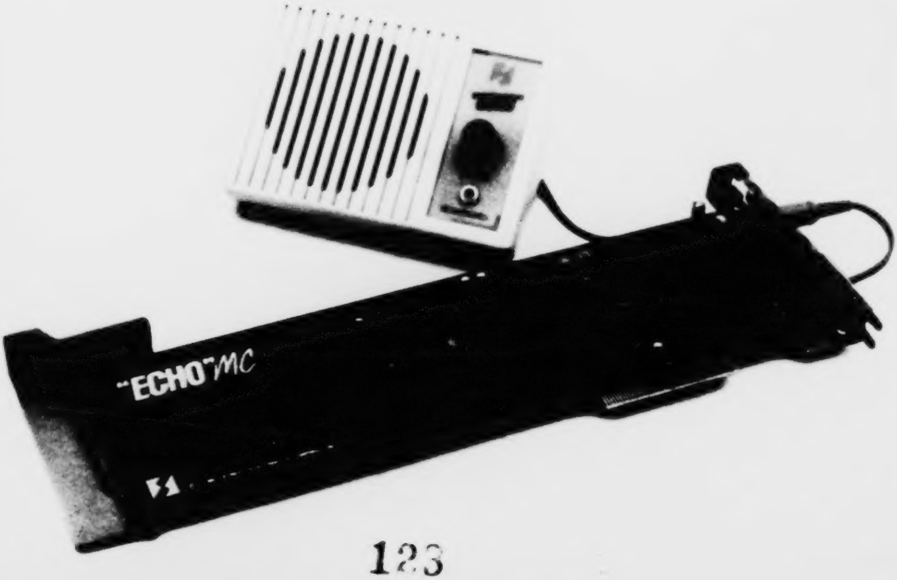
Options: Echo Headphones
Supplier: STREET ELECTRONICS CORPORATION

Cricket Speech Synthesiser

The Cricket (also known as the Echo IIc) includes text-to-speech and natural voice capabilities, music, sound effects and a clock calendar. The clock function allows the user to time and date stamp ProDOS files. Included is a built-in speaker with volume control and headphone jack, power supply and tutorial manual. The Cricket interfaces with the Apple IIc through the modem port cable supplied. Software includes demonstration and utility programs.

Price: US $179.95
Options: Echo Headphones
Supplier: STREET ELECTRONICS CORPORATION


"ECHO"
VC


"ECHO" MC

"ECHO" 1000

ECHO+

"ECHO"
Echo IIb™
STREET ELECTRONICS CORP
APPLE SPKR

Mimic Speech Synthesiser

This is a portable or mains operated unit which interfaces to a BBC or Amstrad PC1512 computer. Screen reading software is available which allows speech output of all on screen information.

Price: £210
Option: Screen reading software.
Supplier: TOUCAN COMMUNICATION AIDS LTD.

Votrax

The Votrax Personal Speech System is a phonetically programmable speech synthesiser with a self contained speaker and serial and parallel interfaces for connection to a computer. Features: unlimited vocabulary output, text to speech translator, user defined exception word table, 256 programmable frequencies, 16 programmable amplitudes and speech rates, 3500 character definable buffer, music capability, programmable clock with 8 definable speech alarms.

Price: US $449
Supplier: VOTRAX INC.

DECtalk

A full-featured voice synthesizer offering six different voices (male and female, child and adult). Converts text sent from the host computer to a pronunciation code using a combination of dictionaries and letter-to-sound rules. Takes into consideration surrounding words and their effects on the individual pronunciations. Rate of speech is adjustable from 120 to 350 words per minute. Provides a user-specified dictionary for commonly used acronyms, trade terms, and special words. Speaks through an internal speaker, headphones, external speaker, or over the telephone. Accepts input from a computer through the RS-232C communications port.

Price: US $4,200
Supplier: DIGITAL EQUIPMENT CORPORATION

Type 'N Talk

A phonetically programmable voice synthesiser equipped with a standard RS232 serial interface. Features include: text to speech, 750 character buffer, adjustable pitch and volume, 1 watt audio amplifier.

Price: US $299
Supplier: VOTRAX INC.

Votalker

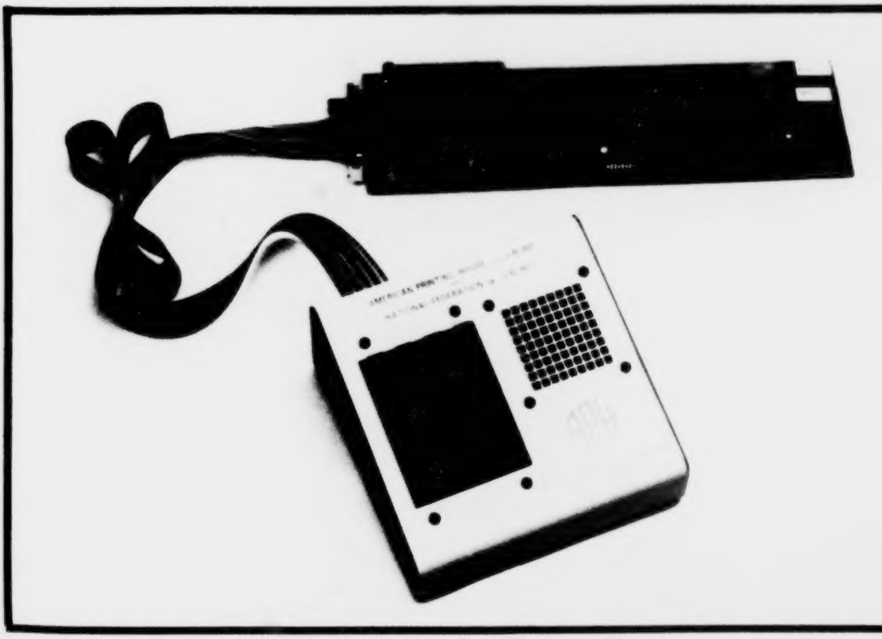
The Votalker IB and AP speech synthesisers each provide four voice patterns through on board switches. Each has two pre-programmed voice modes that can be customised through the filter. Each model has a self contained speaker, audio amplifier and external speaker jack. The IB and AP plug into any open slot on an IBM or Apple computer.

Price: IB US $249, AP US $179
Supplier: VOTRAX INC.

Audiocard 300E

The Audiocard provides an audio channel for IBM PCs and compatibles. Acoustic signals such as speech, music or sound can be digitally recorded and then remastered to produce flexible and concise speech files. Playback is not synthesised but a digital representation of the original sound. Graphics/text can be reinforced by interactive, synchronised audio. Alternatively, Audiocard can operate as a background function of application software, providing information independent of graphics and text. The Audiocard supports Turbo PASCAL, Assembler, 'C' and BASIC. Supplied are: short expansion board, microphone, loudspeaker and software.

Price: £299 + VAT
Supplier: STC MERCATOR



Speaqualizer

The Speaqualizer is a speech synthesis device designed for use with the IBM PC, XT, AT, or compatible personal computers. This synthesizer reads text which is sent to the video monitor. Any program will operate with the Speaqualizer as long as it sends character data to the screen and uses the system cursor. This unit allows for control over the voice, including speed, volume, amount of punctuation spoken, etc.

The Speaqualizer consists of a full-sized card which fits into one of the computer's expansion slots; a control box which houses the speaker, an earphone jack, and a command keypad; and an RS-232 connector cable. The manual is provided in Braille and in regular print. The Speaqualizer has a one year warranty.

Price: US $795.95 (subject to change without notice)
Supplier: AMERICAN PRINTING HOUSE FOR THE BLIND

SLIM

The Synthetic Language Interface Module is a speech output device for IBM PCs and compatibles. The package includes an internal accessory card, external speaker, speaker (headphone jack and compact cursorpad program). Features include an unlimited number of customised vocabulary files, locate, define and read screen windows, adjustable volume, pitch and rate (up to 700 wpm). SLIM analyses both punctuation and sentence structure programs such as Word Perfect, Lotus 123 and Dbase.

Price: CAN $695 + TAX + Shipping
Supplier: SYNTHA-VOICE COMPUTERS INC.

Calltext 5000

An internal circuit card that provides highly intelligible synthesised speech output for the IBM PC. Converts any sequence of ASCII characters routed to it into English. A speaker can be connected directly to the board. Will also answer incoming phone calls, send a synthesized speech message, and dial outgoing calls. Three different male voices are provided.

Supplier: SPEECH PLUS INC.

Calltext 5050

An external module that converts output from a computer into highly intelligible synthesized speech. Connects to a computer's RS-232 port,& converts the outgoing ASCII characters into speech according to its programmed rules of pronunciation. A number of special pronunciation modes, such as letter by letter or abreviation expanding, are possible. An external speaker can be connected directly to the unit. Can answer incoming phone calls. send a synthesized speech message, and dial outgoing calls. Can be adapted to handle up to five channels of data input/ouput. Three different male voices are provided.

Supplier: SPEECH PLUS INC.

Microspeech 2

A voice output terminal which, via the RS232 port, will interface with a computer or ASCII keyboard. It converts phonetic code or text to synthesised speech. Upto 100 phonetic characters, about one minute of speech maybe assembled in the buffer before it is commanded to speak. Size: 300 x 270 x 65 mm. Weight: 2.2 Kg.

Price: £500 + VAT (approx)
Option: Text to phonetics translator, allowing operation directly from English text.
Supplier: COSTRONICS ELECTRONICS

Supertalker

A hardware and software package designed for adding speech output to IBM PC programs. Hardware component consists of an internal circuit card and a microphone. Phrases are spoken into the microhone and are processed into a digital pattern which can be stored in the card's memory system or on disc. The software provided offers user utility programs for adjusting how the sound is stored and for adding the spoken phrases at desired points in an application program. About 120 seconds can be stored on a standard diskette. Voice output is through a built-in speaker. Each phrase played back must first be recorded as the Supertalker is not a speech synthesizer.

Supplier: MOUNTAIN COMPUTER

Prose 2000

A text-to-speech board for IBM PCs and compatibles. In addition to speech output for any ASCII text file, the Prose 2000 will accept ASCII coded phoneme codes for non standard words and names. Other features: abbreviations, numbers and symbols are converted to speech; human-like inflection is produced, based on content and punctuation; voice output can be synchronised with other events; there are 3 male voices to choose from with an output of 50-200 wpm.

Options: Prose 2020 is the Prose 2000 board packaged as a peripheral device.
Supplier: SPEECH PLUS INC.

Prose 2020

The Text-to-Speech Conversion Peripheral synthesizes almost any voice message. English words or sentences are processed to produce immediate intelligible speech output. Has unlimited vocabulary capability. For creating libraries of words, sentences, and paragraphs, a computer terminal with an RS-232 port is needed.

Supplier: SPEECH PLUS INC.

Orovox

Orovox is a speech synthesiser which can be used with either A4 or A3 Concept Keyboards. The unit has 248 pre-programmed words/phrases and an equal amount programmable by the user. Facility to alter vowel sounds of speech. Unit can be linked to BBC computer for greater flexibility. Mains or battery powered.

Price: £480-580
Options: QWERTY keyboard.
Supplier: EASIAIDS LTD.

VISUAL IMPAIRMENT

Notex 24

The Notex 24 is an electronic notebook for the blind. Text and other data can be entered and stored using the Braille keyboard; information can be reviewed on the 24 character, 8 dot piezo electric Braille display. The exact position of the Braille line is displayed on the status cells; specific text can be found by switching forwards or backwards to freely defined blocks or by the automatic word find function. The Notex 24 will store the text format program and interface data for 4 different devices enabling it to be used with printers, Braille embossers, devices such as the Braillex or Delta, personal computers, typewriters and modems. Memory capacity: 256K.

Price: £4,695 + VAT
Supplier: ALPHAVISION LTD.

Braille 'N Speak

Braille N' Speak is: a Braille to print transcriber, a note organiser; a talking Braille notebook, clock, calendar and telephone directory. It features a seven key Braille keyboard and can store up to 200 pages of information which can be edited and searched under the word processor. Grade I or II Braille can be converted to full text and spoken by the built-in speech synthesiser. It has two communication ports for connection to printers, computers, modems etc. Battery powered with a 200,000 character non-volatile memory. Dimensions: 10x20cm, 25mm thick, weight 1Kg. Included are: headset, batteries and charger.

Price: £945
Supplier: SENSORY SYSTEMS LTD.

NOMAD

The NOMAD is a portable, IBM compatible, laptop computer with a Braille keyboard, speech output, dual disk drives and a 1200 baud Hayes compatible smart modem. Text can be either entered and saved as Grade II Braille, or translated to full text as it is typed. The speech synthesiser can read from 50-700 wpm with full voice inflection; context is checked before delivering the correct pronounciation; pitch, rate and volume are adjustable. The Cursorpad enables files to be manipulated and selectively spoken - by character, word, etc., and punctuation and enhanced text to be identified. NOMAD is equipped with a standard video port, serial and parallel printer parts and an external QWERTY keyboard interface.

Price: CAN $2295 + TAX + Shipping
Supplier: SYNTHA-VOICE COMPUTERS INC.

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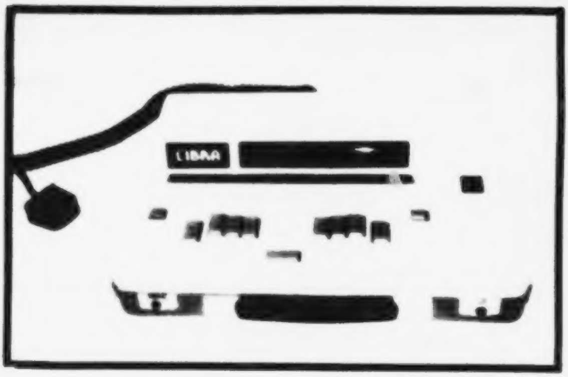

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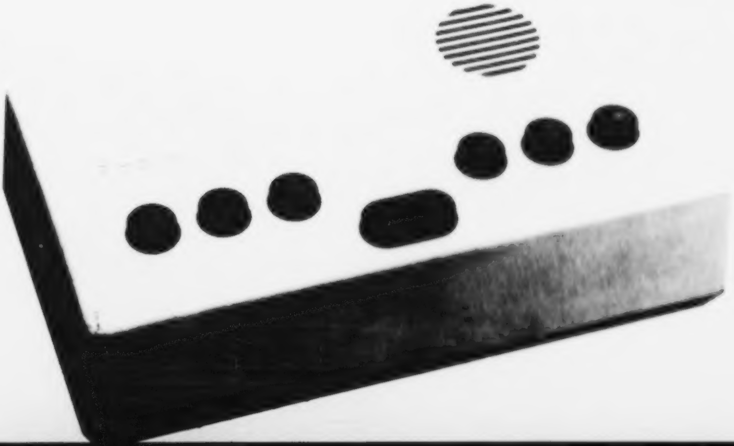
Libra

Libra is a microcomputer for people who are blind. Then Braille keyboard 40 cell display uses 8 dot Braille; the twin disc drives provide a storage capacity of 1.5 MBytes; 52K RAM text storage; rechargeable battery or mains powered. As a stand alone unit. Libra can be used as a text editor or notebook, with optional CP/M and MSDOS it becomes PC compatible and has access to a wide range of commercial software packages. It has two RS232 ports for connection to text and Braille printers, VDU or a computer.

Options: CP/M and MSDOS
Supplier: LIBRA (RW) LTD.



Note-a-Braille II

A portable Braille note taker, the Note-a-Braille has an eight page memory which can be uploaded in standard ASCII code through a standard RS232C interface to an IBM or Apple Computer. The ASCII output of the device means that it can be used on line as a replacement for the computer keyboard via the serial port. A tutorial disc and communication software are provided, enabling notes to be reviewed and edited using off-the-shelf word processors. Supplied with carrying case, battery and serial adaptor and cable.

Price: US $395 + Freight
Supplier: HY-TEK MANUFACTURING CO. INC.

APH PocketBraille

The APH PocketBraille is an electronic Braillewriter/computer which, as a stand alone unit, allows for the writing and editing of approximately 250 pages of Grade 2 Braille. When combined with a personal computer, the APH PocketBraille becomes a peripheral capable of sending and receiving documents as ASCII files.

When used as a stand alone device, the APH PocketBraille's main form of output is synthetic speech. A reverse translator allows documents to be spoken, or to be printed out either on a Braille embosser or on a regular printer.

The APH PocketBraille combines a seven key Braille keyboard, a microprocessor, 224K of non volatile RAM, a speaker, and rechargeable batteries in a portable unit measuring 216 x 108 x 51mm. The rear panel of the unit is fitted with four input/output ports, which include standard serial and parallel ports. It comes with a recharger plug, carrying case, and a manual in Braille and in print.

Price: US $800 (Estimate)
Options: External 32K memory modules, a refreshable Braille display, the Screen Door connector, allowing the unit to become a speech synthesiser for a personal computer.
Supplier: AMERICAN PRINTING HOUSE FOR THE BLIND

The Insight Pocket Brailler

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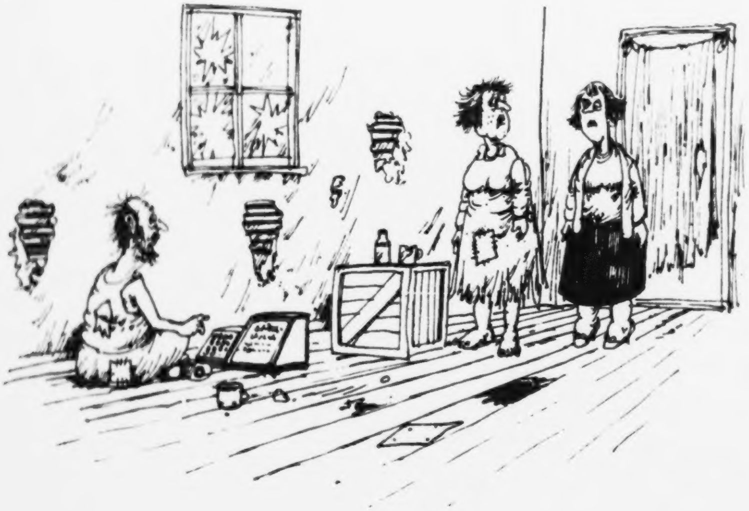
The Insight Pocket Brailler is an electronic memory device designed to store Braille text which is to be later embossed or printed. The Braille is entered in the normal way using conveniently placed keys.
The Brailler measures 15cm x 8cm x 3cm and weighs 225g.
The unit comes complete with lead, control unit, software and cassette tape instructions.
Using a BBC computer, Versabraille, Vincent Workstation or other compatible computer system, the stored text can then be retrieved and edited, spoken via speech synthesiser, printed or embossed. With the Insight Braille Embosser an embossed tape can be obtained direct, without a computer system. For us with an IBM or Versabraille, an ASCII control unit is required (available separately).

Price: £360
Options: Reel to reel tape embosser.
Supplier: INSIGHT ELECTRONIC PRODUCTS LTD.



'Harry likes to know exactly how poor we are.'

70

Braillewriter

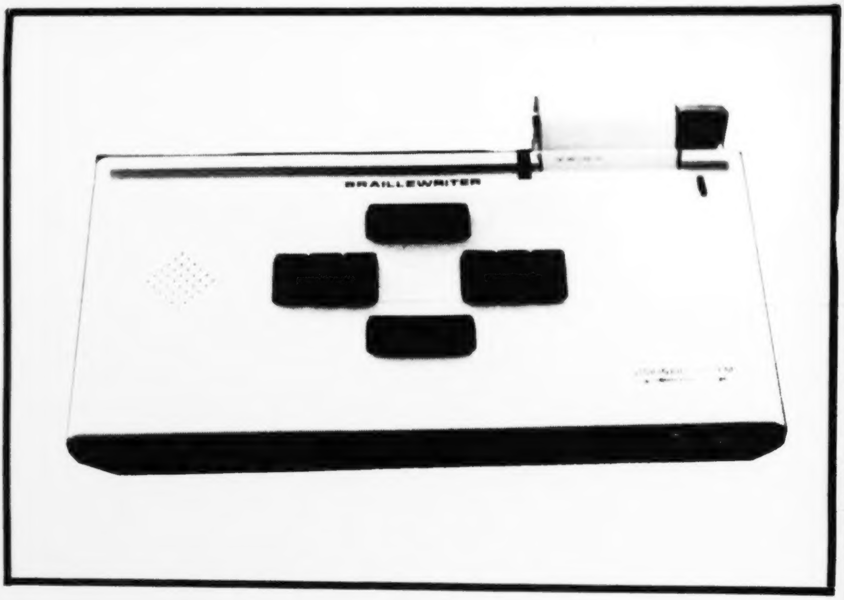
A portable notetaking and communication device for the blind. Grade I or Grade II Braille is input using the keyboard and then stored in memory. The information can then be corrected, altered and formatted before being output. Output can be spoken, printed on the built in printer, or print or Braille output to a peripheral. Information can be transferred to a disc drive or microcassette drive (both optional). Features include speech output of remaining memory and of each letter, or word as it is input. A search facility is included making it easy to retrieve information such as names, addresses and telephone numbers. Powered by rechargeable batteries. Supplied with a waterproof case and earpiece.

Price: PCO183 £995
PCO283 (with printer) £1095
PCO184 (with printer and inbuilt cassette) £1395
PCO184 (with disc drive unit) £1995
Supplier: VISIONAID SYSTEMS

Eureka 4

The Eureka, also known as the Braillist's Filofax, is a portable Braille computer with speech output. Standard features: inbuilt disk drive; note taker; database; word processor; diary; scientific calculator; stop watch, alarm clock and calendar; modem; telephone directory with automatic dialling; music composer; thermometer and voltmeter. The Eureka can be used as a terminal for other computers, directly or via the modem. Connections are also provided for a printer and external QWERTY keyboard.

Price: £1468 + VAT
Options: QWERTY keyboard, Braille embosser, IBM PC Screen Reader software.
Supplier: TECHNOVISION SYSTEMS LTD.



VersaBraille II+

Made by Telesensory Systems, Inc., the VersaBraille is a battery powered Braille computer. It has a rubber keyboard with a 20 cell, 6-dot Braille display and Braille keys, cursor controls, numeric keypad and built-in disc drive. Software includes: a professional word processor and formatter, calculator and keypad redefine facility. VersaBraille has both parallel and serial ports.

Price:	£4695
Options:	External disc drive, 2-way Braille-ASCII translator, Braille Interface Terminal emulator and Spell Checker.
Supplier:	SENSORY SYSTEMS LTD.

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Mountbatten Brailler

An electronic Braille embosser with an integral Braille keyboard and RS232 port. It is battery powered; when fully charged the battery pack allows up to 40 pages to be embossed. Features include automatic paper alignment and correction facility. A memory option is available which allows notes to be taken and printed out at a later date. Developed at the Royal National College for the Blind.

Price: £500
Option: Memory add-on.
Supplier: PANKHURST DESIGN AND DEVELOPMENT LTD.

Daisy Braille Printer M1003

A desk top printer which can produce full Braille as well as black script. This makes it possible to use the same textfile to produce both Braille and black script output on the one machine.

Supplier: SIGHT & SOUND TECHNOLOGY LTD.

The Marathon Brailler

A high speed portable Braille embosser, equipped with both serial and parallel ports, it will interface with virtually any computer system or host device. There are 16 configuration menus available in non volatile memory, 8 of which are preset at the factory for popular microcomputers. Menu and parameter selections are made using a numeric keypad (no dip switches) and can be verified on the visual display. Printing speed: 200 cps.

Options: Braille input keyboard, QWERTY keyboard.
Supplier: SIGHT & SOUND TECHNOLOGY LTD.

Romeo Brailler

A portable Braille printer (weight 11kg) which will interface with most computers and host devices. It has 16 separate configuration menus stored in non volatile RAM making it possible to rapidly change between formats or host devices. Printing speed: 20 cps.

Options: External keyboard, Braille keyboard, built in Grade II translator.
Supplier: SIGHT & SOUND TECHNOLOGY LTD.

Electric Typing Fingers

The ETF was originally designed to allow an IBM selectric or similar typewriter to be used as a printer for IBM PCs, Tandy TRS-80, Apple II and PMC's 80/81; it can, however, be used as an adaptor for the IBM Braille typewriter to allow computer output of Braille. An interface adaptor is required for use with IBM PCs, and for use with the Apple and Tandy computers text-to-Braille translation software called Braille-Edit (Available from Raised Dot Computing) is required.
IBM PC interface adaptor $25.

Supplier: PERSONAL MICRO COMPUTERS INC.

MPRINT

MPRINT converts Grade I and II Braille from a standard Perkins Brailler to simultaneously produce formatted, hard copy print output from an ink printer. The circuit board fits onto the bottom of the Brailler without increasing the keyboard height. The MPRINT permits Braille commands to be entered for extensive print copy formatting and minor editing.

Price: £595
Supplier: VISIONAID SYSTEMS

BETA-X3 THIEL Braille Printer

The user may either input Braille on the X3's keyboard or input Braille text from a computer. Grades 1 and 2 Braille, notation and mathematic script can be printed, and 6 or 8 dot Braille supported. Different Braille character sets such as German Braille may be selected. Raised dot graphics can be created. 11 to 42 characters per line and 10-39 lines per page can be achieved. Text input from another device will be output as uncontracted Braille unless a translator is used.

Supplier: VISIONAID SYSTEMS

Duran Dots

Duran Dots is an adaptation kit for the Brother International HR-40 daisy wheel printers. By switching between the standard and modified rollers, the printer can produce both print and Braille. The kit contains a modified roller, PC Braille text-to-Braille translation software and user manuals (print and Braille). Uses 20lb and 32lb stock form feed paper,

Price: US $710 + shipping
Supplier: ARTS COMPUTER PRODUCTS INC.

MBOSS 35

The MBOSS 35 Advanced Braille Communications System is a word-processing device that incorporates a paper based computer terminal with keyboard, and a braille printer with an output of 35cps.

Price: Advanced £3743
Basic (35cps braille printer only) £2895
Supplier: VISIONAID SYSTEMS

MBOSS-1

The MBOSS-1 is a table top Braille embosser with a 10 cps continuous form feed output. The user can select between 6-dot and 8-dot computer Braille and Grade I Braille (Grade II output requires translation software). There are 8 selectable hammer impact levels for embossing different grades of paper. The user has the choice of either RS232 serial or centronics type parallel interface.

Price: £2595
Options: Quietiser and printer table.
Supplier: VISIONAID SYSTEMS

ATC Resus 214

Designed by the American Thermoform Corporation for the visually impaired user. Features: 200 lines per minute, six or eight dot Braille, tactile pushbuttons, warning lights with audible signalling for power: on/off, reset, run, stop, form feed, test "paper low", print error, data error and end of text.

Price: £13,300
Supplier: SENSORY SYSTEMS LTD.

Braillo

There are two Braillo models, one with an embossing speed of 36 characters per second, the other 60 characters per second. Features: 6 and 8 dot Braille, any Braille codes and ASCII codes accepted, compatible with most personal computers and peripherals.

Price: £2,900 and £4,800
Supplier: SENSORY SYSTEMS LTD.

VersaPoint

The VersaPoint Braille embosser produces high quality Braille documents. Features: bi-directional line printing, a full line of Braille at 20 characters per second, 30,000 character buffer, makes multiple copies, prints graphics. The VersaPoint can also print sideways for actual printout of an 80 column computer screen.

Price: £3,395
Supplier: SENSORY SYSTEMS LTD.

Access PC Braille System

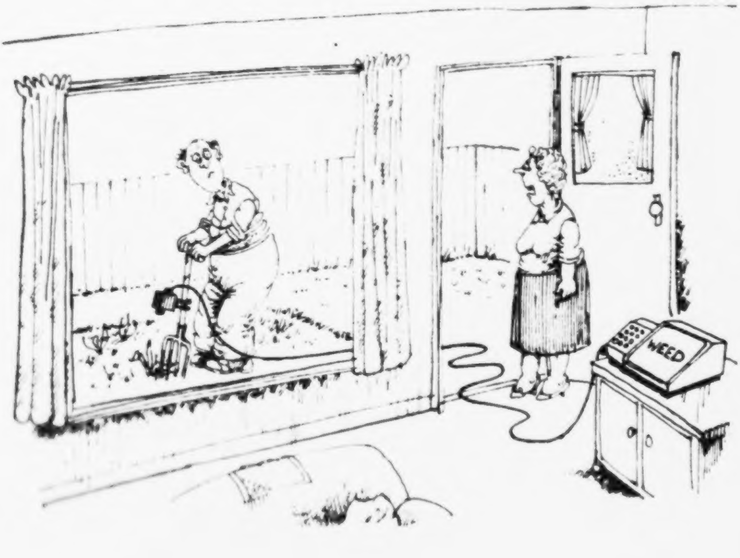
A computer system with Braille output. Hardware: a Bondwell PC with 640K memory; dual disk drives; keyboard; 36cm colour monitor; a tractor feed daisy wheel printer with a modified platen to convert it to a Braille embosser. Software includes PC Braille, a text to Braille translator.

Price: US $3495 + shipping
Options: Enlarged screen characters and speech output $600 each.
Supplier: ARTS COMPUTER PRODUCTS INC.

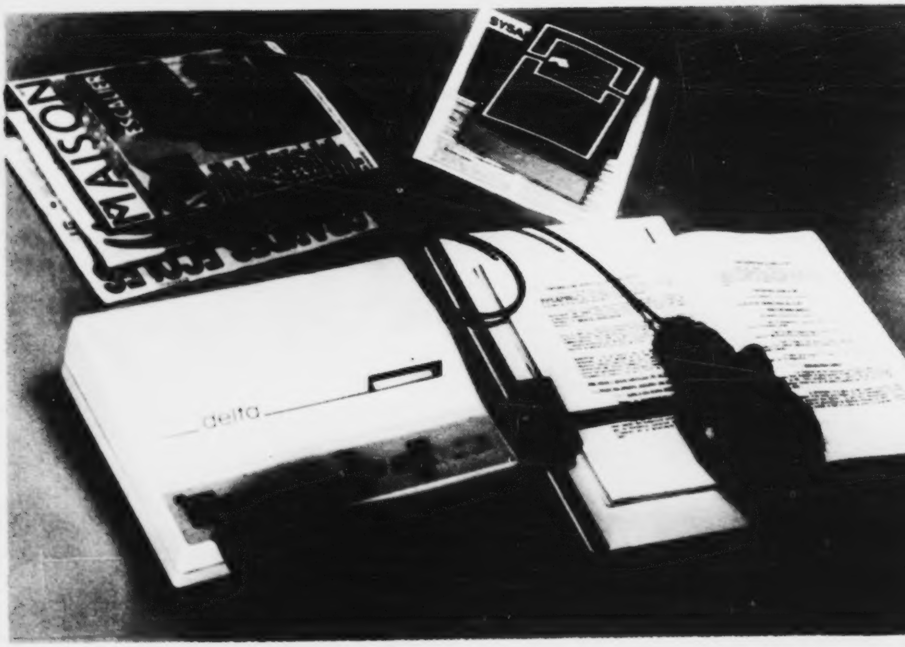
Brailon Thermoform Duplicator

Copy machine for producing tactile relief images. Copies any Braille or embossed original by means of a vacuum forming process. Designed mainly for reproducing high profile teaching aids, geographic maps and mobility maps. Objects and maps up to 5 cm high by 28 cm wide by 45 cm long can be formed. Duplicator plugs into any AC outlet. Original is placed in unit, sheet of braillon paperlike plastic is placed over original and secured, heating unit is pulled into position starting automatic timer. Vacuum pump starts producing copy. Braillon plastic is not flammable, has durable paperlike finish, can be written on with a pen.

Supplier: AMERICAN THERMOFORM CORPORATION



'Yes dear, you can dig that one up.'



Braillex - IB80

An integrated Braille display enabling a blind person to operate an IBM PC or compatible and use all PC programmes except those with full graphics. The special card plugs into an expansion slot, and the Braille display control is either placed behind the keyboard or fastened to the table edge in front of it. Function keys are arranged so that they are comfortably reached by the Braille reading hands. The 80 cell piezo electric display has three representation modes: a Braille window consisting of two lines of 40 Braille characters; two 40 character windows that can be moved independently; and two coupled 40 character windows keeping the same distance. A 40 cell piezo electric display model and an 80 cell electromechanical display model are also available.

Price: £9295

Supplier: ALPHA VISION

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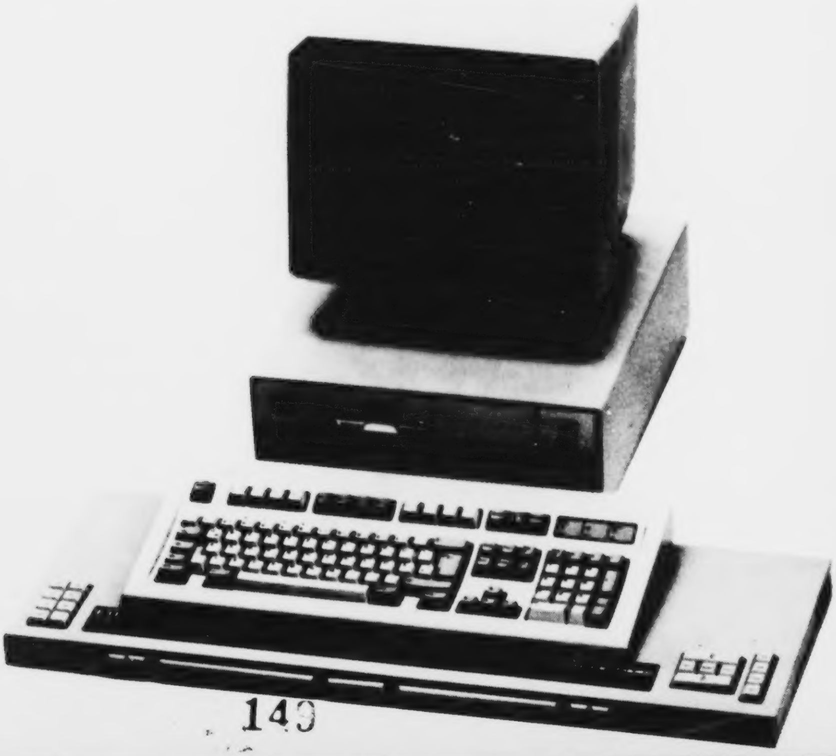
D.E.L.T.A.

Portable reading machine for the blind which translates typed or printed latin characters in Braille (on a 12-6 dots Braille display). An optional Braille keyboard enables the blind user to record messages (grade 1 or 2) or work in a text editor way. Can be directly connected to peripherals: PC compatibles, printers (black or Braille), voice synthesisers, etc. DELTA is equipped with a buffer of 54K and works either on its battery or on the main (4 hours autonomy in reading - 8 hours in typing). Connected to a PC, the user has a total control of his typing on the PC keyboard on the DELTA Braille display.

Price: £5,000
Options: Braille Keyboard, TITUS communication software, Connection cable
◀ Supplier: ALPHAVISION



Optacon II

The Optacon converts regular print into an enlarged vibrating tactile form. As the miniature camera is moved across the letter, the image is reproduced on the tactile array by vibrating rods. The reading finger feels the enlarged letter as it passes across the tactile screen. A special cable allows the user to read directly from a computer.

Price: £2995
Supplier: SENSORY SYSTEMS LTD.

Braille Telecaption System

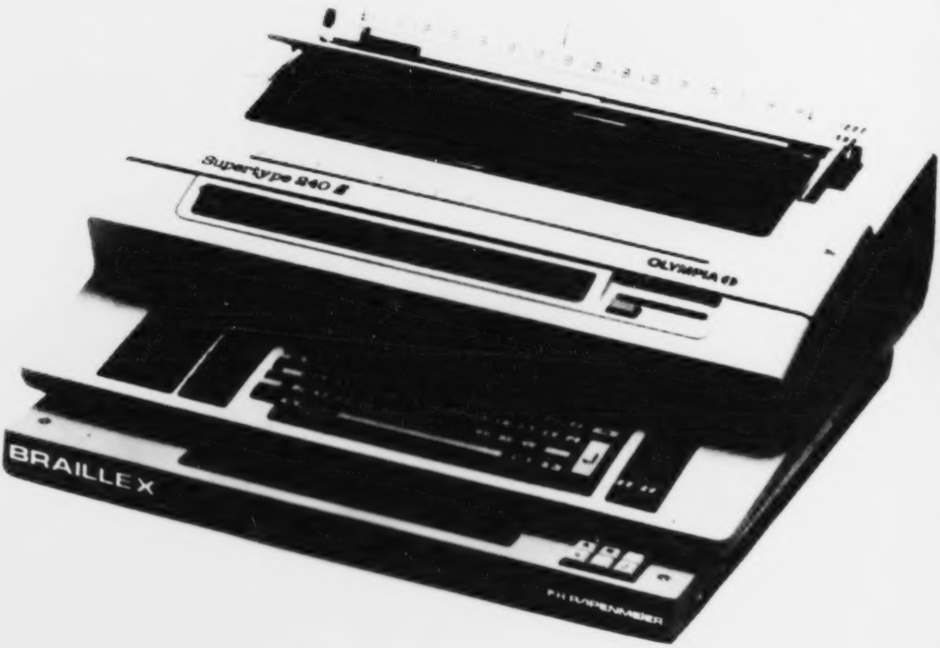
Used with a Telebrailler or other Braille telephone device to provide television programmes to deaf-blind individuals. Telecaption information is provided nationwide on ABC, CBS and NBC for the hearing impaired. The BTS translates this information into Grade I Braille via the Braille telephone device. The information is printed on to the 20 character Braille display.

Supplier: SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Braille Interface Terminal

Contains a 20 cell Braille display which serves as a window to the computer screen. Commands and data are entered using the Braille keyboard. A joystick is used to manoeuvre the review window. Overlay software is provided which gives access to off-the-shelf software.

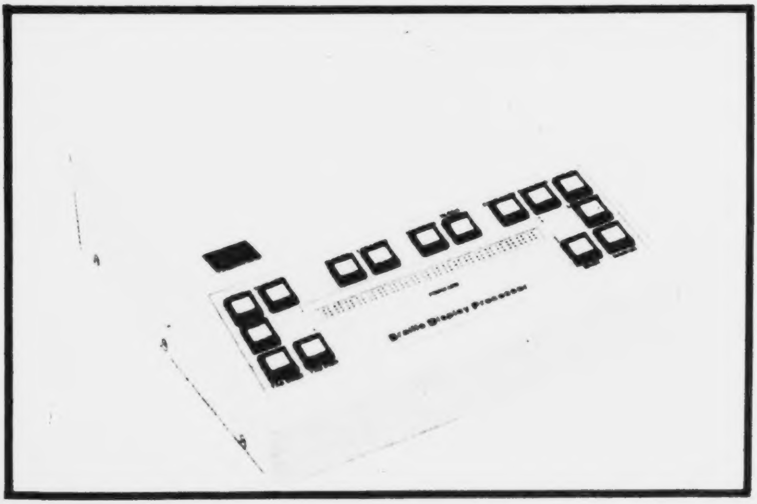
Supplier: SENSORY SYSTEMS LTD.



Braillex Control

The Olympia Supertype electronic memory typewriter linked to a piezo-electric Braille display, enabling a blind person to operate it. The same data which a sighted person is given on the visual display is translated into an 8 dot Braille system.

Price: £8,995 + VAT
Supplier: ALPHAVISION LTD.



Braille Display Processor (BDP)

The BDP is a 20 cell refreshable Braille display for the IBM, Apple, AT and T6300 and their compatibles. It reads the computer's video memory and converts 128 ASCII characters to 6 or 8 dot computer Braille. The BDP runs ASCII text, provides row and column scanning ability, cursor tracking, upper case cursor and control character identification, and audible orientation cues, including Audio Cursor Tracking (ACT).

Price: £2808
Supplier: VISIONAID SYSTEMS

TeleBraille

A real-time portable communication aid for people who are deaf-blind. Facilitates face-to-face conversation or telephone communication between two deaf-blind people.

Supplier: SENSORY SYSTEMS LTD.

IBM Screen Reader

The Screen Reader enables people who are blind or visually impaired to gain access to all on-screen information of the IBM PS/2 computers. By using the 18 key keypad, specific screen areas can be selected and spoken. Similarly, any changes occurring on the screen can be monitored and automatically spoken. It works with applications such as Displaywrite 4, Lotus 1-2-3 and Dbase III PLUS. The Screen Reader supports six commercially available text-to-speech synthesisers (not supplied).

Supplier: IBM NATIONAL SUPPORT CENTRE FOR PERSONS WIT
DISABILITIES

VERT Plus

VERT Plus gives speech verbalisations of the screen information for IBM and compatible computers. Features: navigation, routing, help messages, and column format reading. VERT works with most software, including word processors, databases, communication and emulation programs.The package includes: VERT Plus software and utilities, headphones, plug-in board, documentation on disc, audio tape and Braille reference guide.

Price: £2,995
Supplier: SENSORY SYSTEMS LTD.

The V.P. Speech System

A speech output device for IBM PCs and compatibles. The V.P. will locate designated windows and fields; key labels and on/off states of modes and functions can be spoken. The enunciator key will announce the function of any key without actually performing it. It can search for and speak any screen enhancement. The V.P. has a keyboard macro which can represent up to 30 keystrokes.

Supplier: SIGHT & SOUND TECHNOLOGY

Access PC Speech System

A speech output computer system. Hardware: a Bondwell PC with 640K memory; dual disk drives; keyboard; 36cm colour monitor; tractor feed daisy wheel printer; external speaker and speech card. Software includes Artic Vision which allows application software to be spoken.

Price: US $3495 + $95 shipping
Options: Enlarged screen characters and Braille production $600 each.
Supplier: ARTS COMPUTER PRODUCTS INC.

Artic Vision

A speech output package for IBM PCs and compatibles. Features include speech output for any application software; keyboard input is spoken, screen review capabilities by letter, word, line, sentence or paragraph. Speech rate, volume, pitch and tone are all adjustable. The package contains the synphonix speech card, software on disk, an external speaker and headphones.

Price: US $799 + $10.00 shipping
Options: Braille user's guide $30.00, Turbo pedals $99.95.
Supplier: ARTS COMPUTER PRODUCTS INC.

Frank Audiodata

A speech output access system for visually impaired computer users. The audioterminal has two slider controls located to the left and below a standard keyboard. Using these controls screen locations can be defined and then the content spoken by the internal speech synthesiser. The entire screen, lines and individual words can be spoken. Audiodata can spell, distinguish between cases, announce punctuation and mathematical expressions etc. Compatible with the IBM PC/AT/PS/2/Model 30.

Price: £3,250
Supplier: SENSORY SYSTEMS LTD.

Prompt Writer

A hardware and software package for word processing with voice output. Consists of a software program, a Keytronics 5151 keyboard, and a Votrax speech synthesizer. Options are given in the form of menus and actions are executed with function keys. Program has only one read-back key. "Identify" key causes function keys to speak their function. "Audible windowing" allows user to move back and forth between as many as four files at once.

Supplier: SYN-TALK SYSTEMS AND SERVICES

Speakwriter 200

A speech output device for Brother electronic typewriters. The Speakwriter plugs into the interface printer port, a spoken help facility then allows letter and function keys to be identified. Features include speech for: individual keystrokes or words, margins and tabs; review by character, word, line or whole page.

Price: £700 (approx) + VAT
Supplier: TECHNOVISION SYSTEMS LTD.

SKERFPAD

The SKERFPAD is designed to give people who are visually handicapped access to the screen information of an IBM compatible computer. It consists of a touch pad with an overlay sheet of raised lines which represent the positions of the lines on the computer monitor. The user presses on the touch pad and the information at the corresponding screen location can then be spoken out by a speech synthesiser. System requirements: an IBM PC/XT compatible computer with a game port and either a serial port with an Echo synthesiser or an Artic 200 internal synthesiser (these synthesisers are available separately). Update discs and overlays are free for one year.

Price: US $250
Supplier: LOUGHBOROUGH, BILL

Laser Cane

The Nurion Laser Cane is an electronic orientation aid for people who are blind. Powered by a rechargeable battery, the cane uses three lasers: down, forward and up to detect obstacles. Light reflected back to the cane is detected by the optical receiving unit and audible feedback is given - a different tone for each direction. In addition, the forward laser provides tactile feedback through the index finger. Either mode of feedback can be used on its own or both can be used simultaneously. The Laser Cane includes: battery pack and charger; spare nylon tip; wrist strap; audio cassette and a training program.

Price: US $2975
Supplier: LS & S GROUP INC.

Sensory 6

An ultrasonic mobility aid for blind people. The sensors are fitted to a pair of dark glasses, and the direction of scan is determined by the position of the wearer's head. Any obstacle within range - 3.66m - produces audible feedback through the earphones. The tone produced corresponds to the distance and direction to the obstacle. Detection pattern: 16 degrees horizontal place, 8 degrees vertical place. The base unit comes with an 8 hour battery pack and recharger, belt clip and shoulder strap. Training can be arranged and the user guide is available in both booklet and cassette form.

Price: US $749.95
Supplier: LS & S GROUP INC.

Polaron

A navigation aid for people who are visually impaired. Either hand held or chest mounted, the Polaron emits a sound or vibrates when an obstacle is within range - up to 5m. The frequency of sound and vibration change with distance, informing the pedestrian of the proximity of the obstacle. Includes battery and recharger.

Price: US $748
Supplier: LS & S GROUP INC.

Sharp QA-25

A computer projection panel with an integral cooling fan and carry handle. To be used in conjunction with an overhead projector, the QA-25 produces dark blue images on a grey background. System requirements: an IBM compatible with CGA adaptor and 512K RAM. 'Projector' software features: library of 110 icons, graphical database - stored images accessed by keywords, built-in frame grabber to animate screens etc.

Price: £699 + VAT
Options: Carry case.
Supplier: VISUALEX LTD.

Kodak Datashow

An LCD display panel, which, when used with an overhead projector, produces an enlarged monochrome computer display (dark images on a light blue background or vice versa). The display panel connects to the PC through the IBM standard colour graphics adaptor - not supplied. Images can be presented and edited in real time, or captured and stored on disk - allowing animation sequences to be developed. The Datashow comes complete with an 18 key IR remote control, cooling fan and Showmaker software. Features include split screen, image reverse and electronic pointer. The Datashow works with most application software - spreadsheets, graphics/charts, word processors etc.

Price: £949 + VAT
Options: Hard and soft carry case, Interface for
Amstrad PC 1512, Colour selector,
Composite video interface
Supplier: VISUALEX LTD.

ASK Flat-Screen Overhead

Consisting of a transmissive LCD monitor and plug in adaptor card, the flat-screen overhead enables monochrome computer screen images to be enlarged and displayed using an overhead projector. The system is compatible with all IBM PC software. Suitable for programmers with partial sight.

Price: £1149 + VAT
Supplier: VISUALEX LTD.

PC Viewer

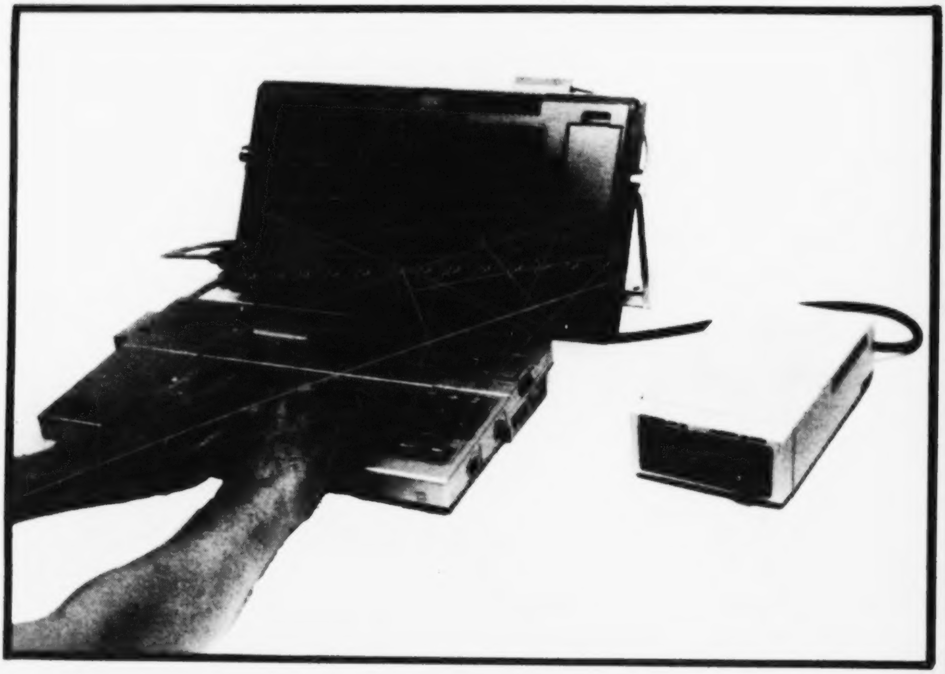
The PC 6448AV enables high resolution (640 x 480 pixels) PC data to be displayed using a standard overhead projector. The unit is heat tolerant to 65 degrees C therefore no cooling fan is required. The PC viewer includes basic vertical, horizontal and contrast controls and colour deselect (8 colours). Works with the Apple family, Macintosh, IBM PC and compatibles (in most cases a colour graphics adaptor or video card is required).

Price: £1495 + VAT
Supplier: VISUALEX LTD.

Limelight

A large print device that projects the contents of a computer screen, Including graphics, on to a wall or screen. Visible in lighted rooms. Focus, brightness, and contrast are easily adjustable. Up to 40 computers can send data to the device with the aid of a data switch. For computers unable to produce the correct video signal, video adapters.

Supplier: APERCOM CORPORATION



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Viewscan Text System

A portable word processor and calculator with a bright, magnified display and a hand scanned fibre optic camera for reading text.

Price: £4995 includes 3 days on site training
Options: VTS Polyterm - includes 1 day on site training £400
VTS PC-Term - includes 1 day on site training $400
VTS Apple Apple-Term - includes 1 day on site training £400
VTS 3.5" Portable disc drive £690
Supplier: LVA MARKETING LTD.

VTEK's DP-
Processor
characters
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VTEK

Large Print Display Processor

A system which enlarges the dot matrix computer display into smooth, solid symmetrical characters from X2 to X16 the original size. This produces characters up to 5 14cm high on a 48cm monitor, and 9cm high on an 31cm monitor. Magnification is increased simply by turning a dial, and the display is scanned using a joystick. There are three models available for use with IBM PC series, Apple II series, the AT and T6300 and other compatibles.

Price: £1895 (£2445 with monitor)
Supplier: VISIONAID SYSTEMS

VISTA

VISTA is an image enlarging system that magnifies the print on a computer monitor by between 3-16 times. Attributes such as highlighting, colours, blinking cursor, underlining, reverse video and graphics are all maintained. A three button mouse is used to control magnification and manual or automatic cursor. A locator window enables the user to instantly find their place. VISTA also has a cursor tracking capability, useful in word processing etc. Hardware requirements: an IBM PC with 256K, serial port, one long slot, monitor.

Price: £1,750
Supplier: SENSORY SYSTEMS LTD.

Access PC Large Print System

A large print computer system consisting of a Bondwell PC (IBM compatible) with 640K memory, dual disk drives, keyboard, monochrome and colour adaptor cards (already installed), a 36cm colour monitor, tractor feed daisy wheel printer and cables. Software includes PC lens which enlarges the screen characters for application software.

Price: US $3495 + $95 shipping
Options: Speech output and Braille production $600 each.
Supplier: ARTS COMPUTER PRODUCTS INC.

Compu-Lenz

A computer screen enlarger which uses Fresnel optics to enlarge characters by up to X4. Incorporated in a filter for glare reduction. Compu-Lenz is compatible with most 23-38cm monitors.

Price: US $189.95
Options: Swivel Mount
Supplier: FLORIDA NEW CONCEPTS MARKETING INC.

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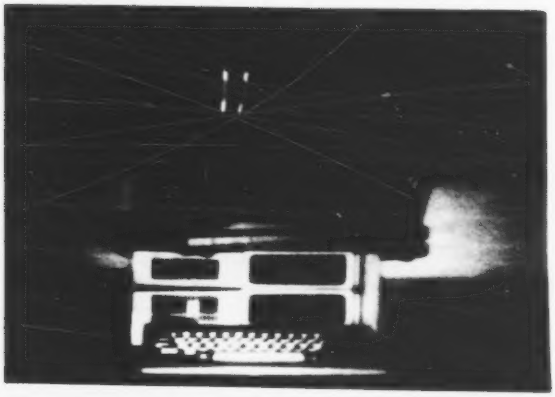


Vidcon

A home entertainment centre for housing a TV, video etc. The cabinet features Beamscope, a precision cut hard acrylic lens which will enlarge the screen image of a 38-64cm TV up to a size of 100cm in the diagonal.

Price: US $349
Supplier: FLORIDA NEW CONCEPTS MARKETING INC.

Colour Traveller

This is a closed circuit television (CCTV) reading aid for partially sighted people. It incorporates a zoom lens with switchable positive or negative image and image enhancement. The system has outputs to both a video monitor and television. Material up to A4 size can be scanned on the X-Y platform. The fact that this system enlarges colour images gives it a range of educational applications. Included are a 36cm monitor and bridge monitor/TV support. A range of other CCTV systems are available.

Price: £1760 + VAT
Options: 50cm monitor, carrying case.
Supplier: ALPHAVISION LTD.

MagniColor I

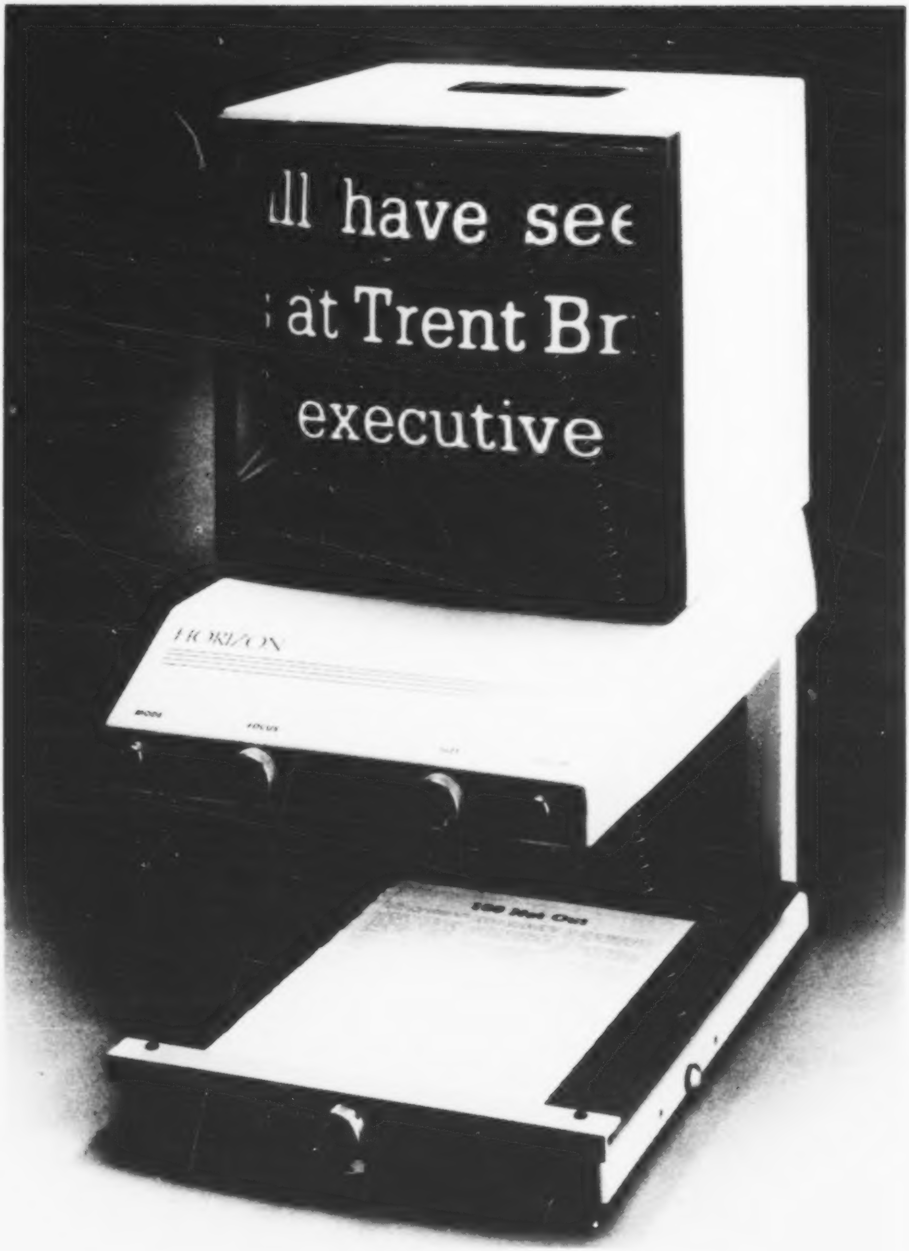
A closed circuit television (CCTV) reading/writing aid for people with low vision. The 48cm television monitor will display colour images enlarged from X6 to X60. Image can be reversed and the foreground and background of black and white material can be tinted. Platform size 36 x 46cm; all plugs and cables are provided; a monitor stand is included. A range of CCTV systems are available.

Price: US $3245
Supplier: LS & S GROUP INC.

System 602

A closed circuit television (CCTV) reading/writing aid for people with low vision. Features: colour camera and monitor; split screen and line marker capabilities; reverse polarity contact; motorised x-y platform. A range of CCTV magnification systems are available.

Options: Distance optics, camera mountings for calculators and typewriters, camera arms, stands, tables
Supplier: COBURN OPTICAL INDUSTRIES INC.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HORIZON
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Horizon

A closed circuit television (CCTV) and writing aid with a 36cm colour monitor. It has outputs for a monitor and TV, dual camera facility, XY platform, variable magnification, enhanced positive or negative imaging and dual fluorescent illumination. LVA supply a range of CCTV systems.

Price: £2150
Options: Additional camera, trolley, line marker facility.
Supplier: LVA MARKETING

'We're hoping to get some more computers so we can teach them longer words.'

Talking Wristwatch

The time is announced in hours and minutes, and also whether am/pm. It also has a talking alarm feature, stopwatch and timer. The LCD shows the time, date, month and weekday.

Price: £14.95
Supplier: MERIDIAN METIER LTD.

VoxWatch

The time is announced on pressing a button. The stopwatch announces elapsed time every five minutes. Also features a digital display.

Price: £34.95
Supplier: INTERTAN UK LTD.

Talking Watch

The Satoki Talking Watch speaks the hour and minute at the touch of a button, the time is automatically announced every hour and half hour. The watch also gives a digital display of the time and date, and a one hour timer.

Price: £35
Supplier: VISIONAID SYSTEMS

Voxclock

A battery powered talking alarm clock. The time is announced on pressing a button. Also features a countdown timer.

Price: £29.95
Supplier: INTERTAN UK LTD.

Time-A-Message

An alarm clock in which the alarm call is a pre-recorded message. Any message up to 20 seconds can be recorded.

Price: US $59.95
Supplier: LS & S GROUP INC.

Talking Clock Radio Cassette

This is a Sharp AM/FM/FM stereo radio and cassette player which speaks the time at the push of a button.

Price: US $119.95
Supplier: LS & S GROUP INC.

Talking Time

A quartz alarm clock designed to be set and operated by people who are blind. The time is announced when the voice bar is pressed; it can be set to announce the time on the hour; verbal and musical alarm; count down timer; 9.5mm LCD characters; 14.3mm thick; pocket sized; carry case included.

Price: US $29.95
Supplier: LS & S GROUP INC.

Talking Alarm Clock

The Spartus Talking Alarm Clock speaks the time when the "announce" button is pressed, it can also be programmed to give the time automatically every hour. It has two independent alarm settings, a check announce to confirm the correct setting has been made and a large LED display. The voice volume is adjustable.

Price: US $36.05
Supplier: LS & S GROUP INC.

Crystal Talk

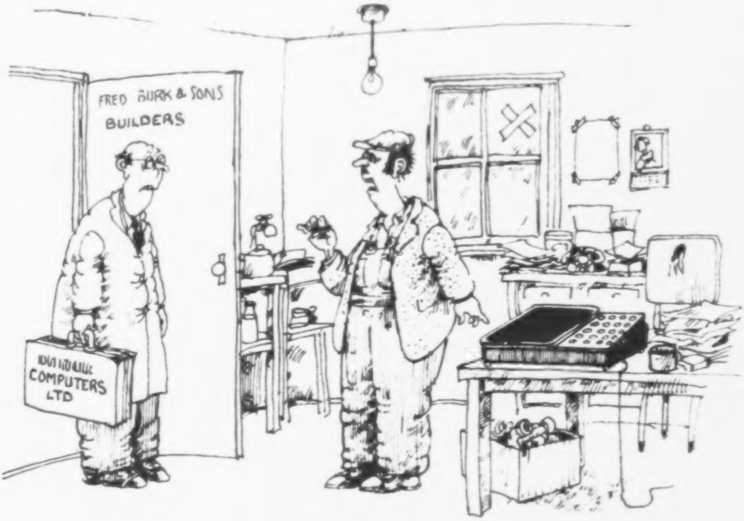
The Citizen Crystal Talk is a "hi tech, hi fashion" cube design speech output alarm clock. Features press button announcement of time; LED time and calendar display.

Price: US $74.95
Supplier: LS & S GROUP INC.

Talking Alarm Clock

This Howard Miller quartz alarm clock has a talking alarm and a 24 hour memory alarm which can be programmed to announce the hour automatically. The time is also announced each time the case is pressed. The clock has an LCD display.

Price: US $38.95
Supplier: LS & S GROUP INC.



'Haven't you got one with less scruples? It refuses to compute cash-in-hand estimates.'

Talking Calculator

The Sharp EL640 features a speaking calculator, clock and calendar - including count up/down with alarms and time announcements.

Price: £69
Supplier: VISIONAID SYSTEMS

Speaking Calculator

The Falck 5510 is a calculator which produces high quality, human sounding speech. A range of voices are available.

Supplier: FALCK PRODUKTER A/S

TCALC

A modified, talking version of the Texas Instruments TI66 programmable scientific calculator. Size: 150 x 50 x 100mm. By pressing two keys calculations are announced as they are entered.

Price: £143
Supplier: JONES, D.B., OPEN UNIVERSITY

Calcu-Talk

A customised, speech output version of the Canon CP1211-D desktop print/display calculator. The voice announces the display output when the 'talk' button is pressed. Features: 12 digit display; integral colour printer - positive numbers are black, negative are red; 8 decimal settings and a two way item counter.

Price: US $599 + shipping
Supplier: SCIENCE PRODUCTS

Talking Clock Calculator

The Sharp voice synthesiser clock and calculator announces the function (add, subtract, etc), each digit, results, year, month and day. The time is automatically announced every hour; 8 digit LCD; daily chime alarm and countdown timer.

Price: US $69.95
Supplier: LS & S GROUP INC.

TI-66 Calcutalk

Texas Instruments model 66 is a programmable, speech output calculator. Broad statistical, business and scientific capabilities.

Price: US $545
Supplier: SCIENCE PRODUCTS

Digi-Voice Tool Module

A speech output device for use in conjunction with digital read-out instruments such as micrometers, calipers, thickness indicators, linear and height gauges. A connection cable (available separately) is required.

Price: US $520
Options: Printer.
Supplier: SCIENCE PRODUCTS

Talking Multimeter

The Beckman Model 310 Multimeter with voice. Press speech button: numbers in the digital display are voices. Measures volts from .1 millivolt to 1Kv, amperes from .001mA to 10A, both AC and DC; ohms from .1 ohm to 20 megohms.

Price: US $649
Options: Automatic repeat of display at preset
intervals; footswitch activation.
Supplier: SCIENCE PRODUCTS

Talk-Tach

A Dwell-volt tachometer with voice output for 4, 6 and 8 cylinder cars. Rechargeable battery pack, variable voice repeat circuitry, external AC adaptor-charger and earphone.

Price: US $595
Supplier: SCIENCE PRODUCTS

Child Guardian

Designed as a means of monitoring the location of a child, the Guardian consists of a transmitter and base monitor. The transmitter clips to a belt or clothing and signals the monitor every 3 - 5 seconds. The monitor alarm sounds if the carrier goes out of a safety range (adjustable: 6 - 90m); if the transmitter is removed; if it falls in water or if the manual alert button is pressed.

Price: US $59.95
Supplier: LS & S GROUP INC.

Lock-Lite

A match-box sized device which beeps to alert the user to the status of the keyboard. Certain keys can be activated or deactivated to indicate repeated errors in hitting such keys. Because the indicators are audible, it can be used effectively by blind and visually impaired individuals.

Supplier: ARTS COMPUTER PRODUCTS INC.

Tape-A-Message

A message/memo board for people who are visually impaired. Messages up to 15 seconds long can be recorded; playback is by simply picking the unit up. Pocket sized, powered by 3 AA batteries (supplied).

Price: US $22.95
Supplier: LS & S GROUP INC.

HEARING IMPAIRMENT

MP40 Memory Printer ▲

A telecommunication device for the deaf; operable in direct connect, using an RJ11 phone jack, or by using the built-in acoustic coupler for a telephone handset. Features include: 2K memory; 4 outgoing message buffers; auto-answer remote retrieval of messages; dialling from keyboard; dialling from memory; a 32 character visual display; a 40 character per line printer; tone or pulse dialling.

Price:	US $629
Options:	ASC11 code modem, clock/calendar, electronic voice message, carrying case
Supplier:	KROWN RESEARCH INC.

Minicom III

A portable, rechargeable battery powered, telecommunication device for the deaf. The Minicom III incorporates a Dual Noise Isolation Receiver, which improves reception from a noisy environment, and flexible acoustic cups to accommodate a variety of telephone handsets. Communication is through the QWERTY keyboard and 20 characater display. An AC charger/adaptor is included.

Price: £115 + VAT
Options: Heavy duty rechargeable batteries
Supplier: TACKFIELD LTD.

Minicom V Supercom

Minicom V is a telecommunication device for the deaf, compatible with Minicom III, but more sophisticated. Communication codes: Baudot 45.5 - enabling communication with a Minicom III; Baudot 50 - the "international" code; CCITT 300 - enabling communication with a Vistel 2 and some computers; CCITT 110 - the European computer code. Memory: 1.5K to input off-line and then send a message; 5.3K to store a conversation; memory edit functions - insert, delete and clear. The voice announcer speaks the message: "Hearing Impaired Caller, use TDD." Communication is through the QWERTY keyboard and 20 character display. Other features: flexible acoustic cups, parallel printer port and AC adapter/charger.

Price: £155 + VAT
Supplier: TACKFIELD LTD.

8º

MP20D Memory Printer

A telecommunication device for the deaf which is operable in direct connect, using an RJ11 phone jack or by using the built-in acoustic coupler for a telephone handset. Features include: 2K memory; 4 outgoing message buffers; auto-answer; remote retrieval of messages; dialling from the keyboard, dialling from memory; a 20 character per line printer; a 20 character visual display and a carrying case.

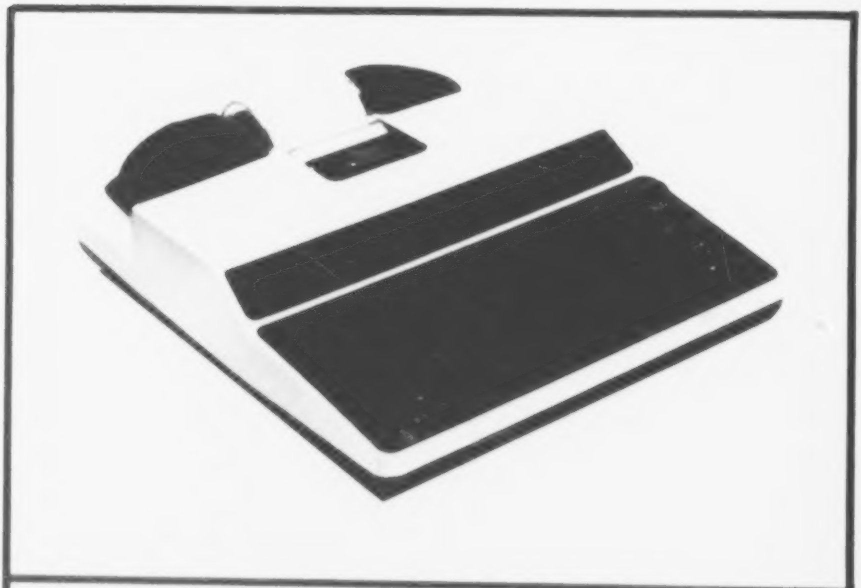
Price: US $475
Options: ASCII code modem, clock/calendar, electronic voice message, square handset coupler, dust cover, paper and batteries.

Supplier: KROWN RESEARCH INCORPORATED ►

PV20 Portaview Junior ►

A telecommunication device for the deaf which is operable in direct connect, using an RJ11 phone jack or by using the built-in acoustic coupler for a telephone handset. Features include: 20 character display; four row keyboard; keyboard dialling; auto answer; international code; printer port; vinyl carrying case; rechargeable batteries.

Price: US $229
Options: Square handset coupler, dust cover
Supplier: KROWN RESEARCH INC.

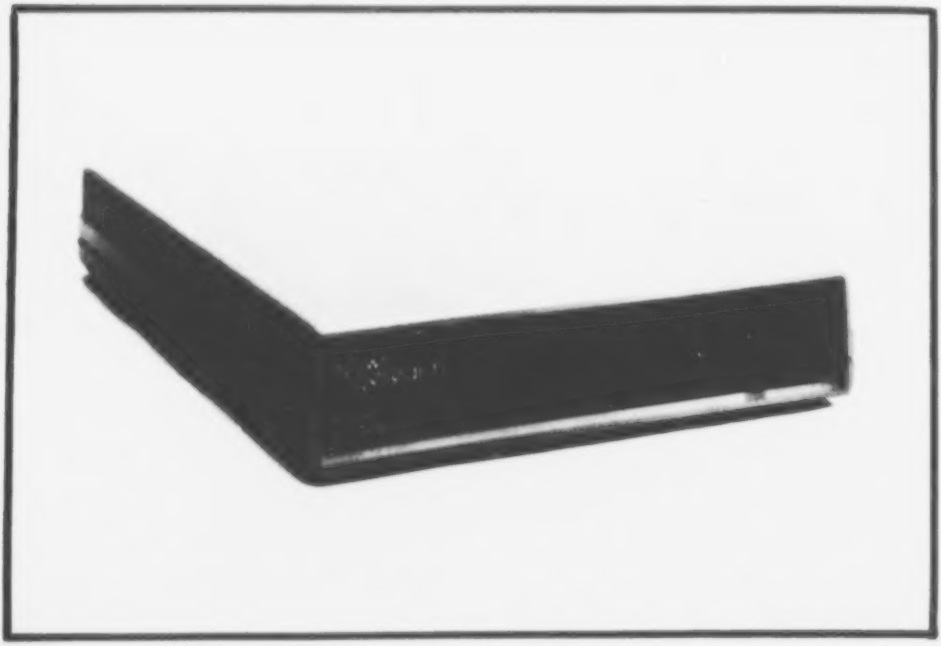


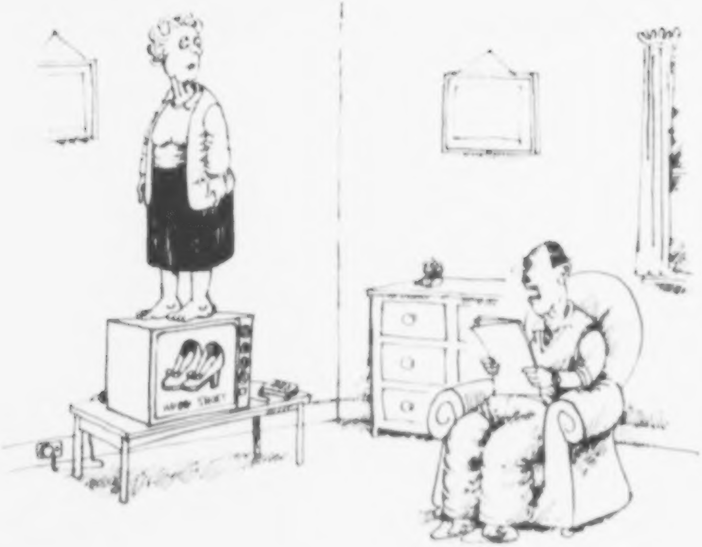
SM85 Smart Modem

A computer modem that allows communication between a computer and telecommunication device for the deaf (TDD). It automatically senses the incoming message speed from the teletypewriter or TDD and adjusts it to the speed of the computer and vice versa. Features: 4K of programmable memory; auto dial tone or pulse; built-in 10 number phone directory.

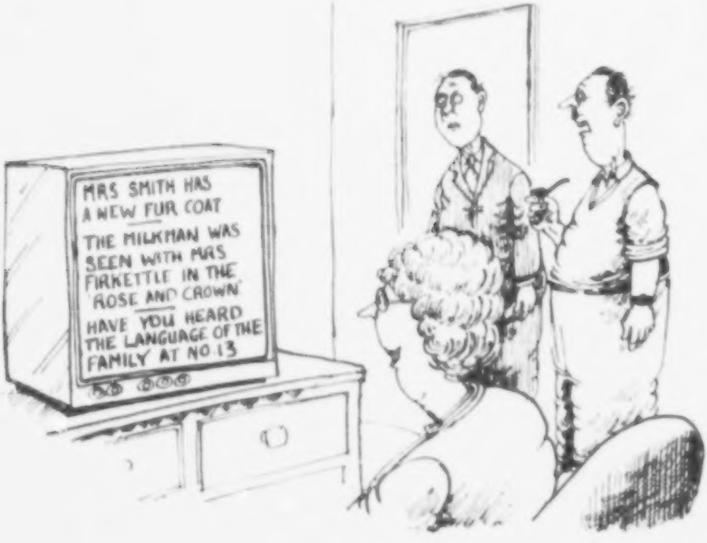
Price:	US $349
Options:	Clock/calendar, bulletin board system software

Supplier: KROWN RESEARCH INC.





'Yes, they look fine to me dear.'


MRS SMITH HAS A NEW FUR COAT
THE MILKMAN WAS SEEN WITH MRS FIRKETTLE IN THE 'ROSE AND CROWN'
HAVE YOU HEARD THE LANGUAGE OF THE FAMILY AT NO.13

*'It's run by the local WI.
It's a gossip data service.'*

Teletext Adaptor

This allows non teletext televisions to receive Ceefax and Oracle. In addition, it allows programmes broadcast with subtitles to be recorded on a video cassette recorder (not supplied). The adaptor and television can both be controlled remotely from the keypad.

Price: £229.95 + VAT
Options: Audio output for listening aids.
Supplier: NUFAX LTD.

Teletext Decoder

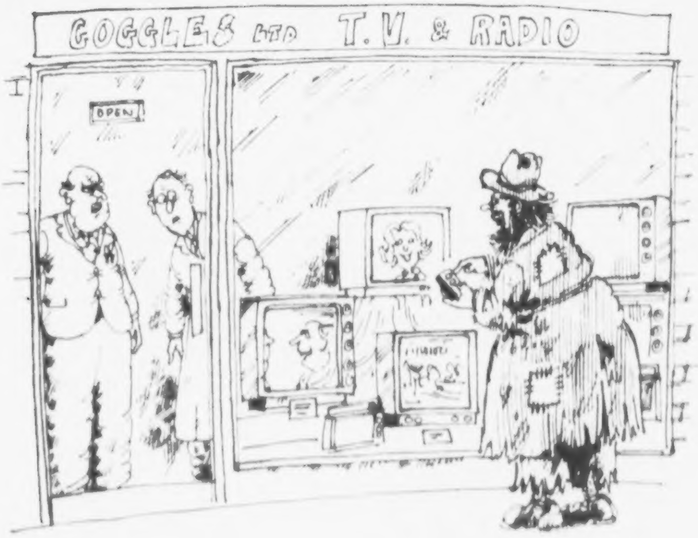
The TAD 150 turns a colour TV set into a Teletext receiving set. It also enables subtitled TV programmes to be recorded on video tape (this is not possible with a standard Teletext TV). The TAD comes with a hard wired hand controller.

Price: £159
Supplier: RADOFIN ELECTRONICS (UK) LTD.

Telecaption II Adapter

Makes visible on a television screen the closed caption (subtitles) available with some programmes which represent the converted audio portion of the programme. Attaches to any television set.

Supplier: NATIONAL CAPTIONING INSTITUTE INC.



'It's bad enough having him stand there all day watching, without him changing the channels as well.'

Induction Loop Driver

The ILD9 is designed for single turn loops up to 500m2. Frequency response up to 10KHz is possible - allowing full musical reproduction. An inbuilt compressor limits input signals to acceptable levels, and loop currents can be monitored on the LED display and with headphones. A special feature of the circuitry prevents radio frequency interference. Conventional hearing aids may be used with the appropriate 'T' setting.

Supplier: TRIUMPH COMMUNICATIONS LTD.

Univox 38B

The 38B is an induction loop amplifier which can cover loop areas of up to 150m2. In domestic loop systems, and "override" facility may be used to transmit doorbell and telephone signals over the loop system. In this case, the programme the user is listening to is momentarily cut off so that the signal may be heard distinctly.

Price: £240
Options: Audio mixer, microphone.
Supplier: LIC LTD.

XL500 Induction Loop Amplifier

The XL500 is designed for public places and can cover up to 500m. Features: automatic on and off switching of power supply ('off' if no signal is received for 5 minutes); loop status indicators; thermostat controlled cooling; a built in limiter in the loop output - this is designed to maintain sound quality when the loop current is high.

Price: £655
Options: Mixer, microphones
Supplier: LIC LTD.

XL Combi

The XL Combi is a loudspeaker amplifier, induction loop amplifier, sound mixer and equaliser. Any microphone and speakers can be connected, and a tuner, tape deck and record player. All the functions are displayed on LEDs and the unit is suitable for rack mounting.

Price: £1400
Options: Lorgnette, microphones, speakers.
Supplier: LIC LTD.

Silent Page II

The Silent Page consists of two units: a sensor transmitter that is placed near the sound source and a wrist worn receiver. When a monitored sound occurs, a coded vibration pattern on the receiver identifies the source. Four different sound sources can be discriminated between in this way, a separate transmitter is required for each sound. Transmitter-receiver range = 2.54m; supplied are one receiver, one transmitter and batteries.

Price: US $378
Options: Additional transmitters.
Supplier: LS & S GROUP INC.

Sound Wedge

The Sound Wedge connects to a phone jack and to a stereo, when the phone rings the volume of the stereo is automatically reduced. The volume is also reduced when the receiver is picked up to make a call. In each case, the stereo volume is restored when the receiver is replaced.

Price: US $29.95
Supplier: LS & S GROUP INC.

Signalman

The Signalman Control Unit attaches to the telephone and a lamp, flashing the lamp on and off when the telephone rings. The unit can be switched to give a noiseless flashing lamp or to allow the phone to ring normally.

Supplier: AT & T NATIONAL SPECIAL NEEDS CENTER

End-O-Line-Lite

Designed for the hearing impaired typist using a typewriter who finds it difficult to hear the bell which indicates the end of the typing line. As the end of the line approaches, a light comes on at the same time as the typewriter bell and stays activated for 6 seconds. End-O-Line-Lite automatically adjusts to the right-hand margin setting.

Supplier: TYPEWRITING INSTITUTE FOR THE HANDICAPPED

Sentinel

This unit (mains or battery powered) will alert a deaf person to a wide range of sounds. It has a built-in light display but can also be supplied with a plug in flashing beacon or vibrator pad. Using a remote or inductive pick up device it can be set to respond to a particular sound, such as a phone ringing (ignoring other sounds). Holding Sentinel to the phone earpeice it is possible to monitor an outgoing call. The pattern of the light display can be used to distinguish between ringing and engaged tones.

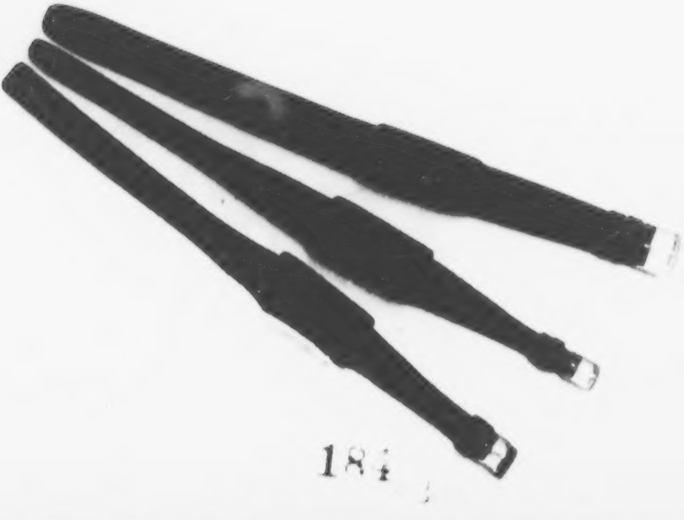
Price:	£29.00
Options:	Vibrator £12.00, beacon £12.00, battery eliminator (mains) £9.75, remote microphone £4.00, extension cable 10' £3.45, 20' £4.60, 30' £5.75, telephone inductor £2.30, + postage and packing.
Supplier:	SUMMIT

►

TAM (Tactile Acoustic Monitor) ►

A lightweight, wrist worn tactile vibrator for profoundly deaf people. It has a small, body worn control unit which picks up environmental sounds and makes the wrist band vibrate. It can be used to give support to lip-reading and to distinguish between sounds such as the intermittent ring of a telephone and a continuous noise.

Price:	£125
Options:	Rechargeable battery £5.00, battery recharger £13.60, TAM training programme. Postage and packing - £2.00, each extra item - x .30p.
Supplier:	SUMMIT



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Telephone Amplifier

The amplifier fits over the telephone earpiece, has an adjustable volume control and a power on/off indicator.

Price: £14.95
Supplier: MERIDIAN METIER LTD.

Hearpiece

The Hearpiece slips over a telephone earpiece and inductively collects and expands the incoming signal. The volume control can boost the incoming signal up to five times its normal level.

Price: £23.95
Options: Spare batteries.
Supplier: EPC LTD.

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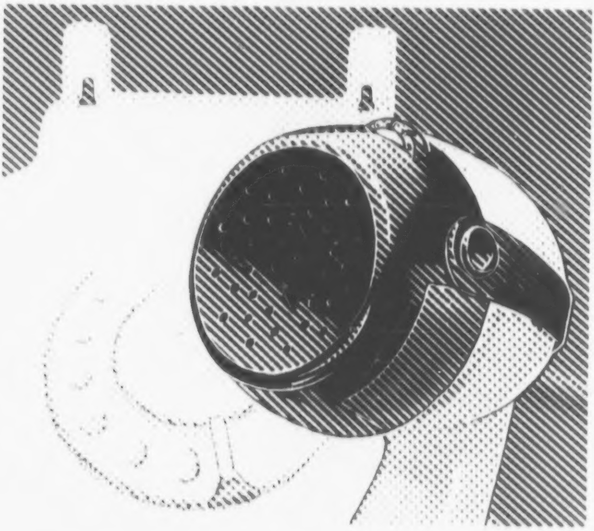

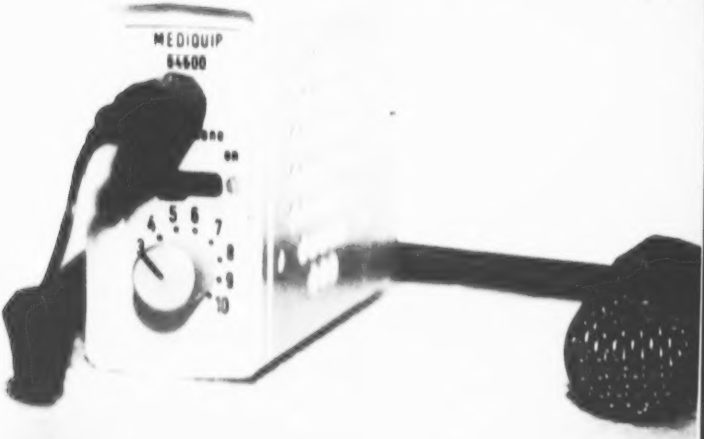

Speech Amplifier

The Mediquip Speech Amplifier is a pocket device (33x65x110mm) for the acoustic amplification of undertones speech - oesophageal speech. Features: acoustic amplification 15dB (approx.); a manageable variable pressure microphone (70g). Supplied with batteries and recharger.

Price: £235 + VAT
Options: Headset speech unit
Supplier: MEDIQUIP LTD.

PockeTalker

The PockeTalker is a lightweight personal listening system designed to amplify conversations, TV, etc., whilst reducing background noise. It works with or without a hearing aid. The system includes: amplifier, microphone 9v battery, TV listening kit, wide range earphone, carrying case and two year limited warranty.

Options: Neckloop Telecoll Coupler - this magnetically couples the audio signal into any hearing aid equipped with a "T-switch" telephone pick up coil.
Supplier: AT & T NATIONAL SPECIAL NEEDS CENTER

Tone Ringer

The Tone Ringer concentrates the sound energy of a telephone ring into a frequency range more easily heard by people with hearing impairments. The Tone Ringer has three volume settings.

Supplier: AT & T NATIONAL SPECIAL NEEDS CENTER

Speech Amplification Handset

The AT & T telephone handset amplifies the volume of an incoming voice by up to 30%. The volume control is situated on the neck of the receiver. Models include: the GF, R6 Merlin-style and K6 contemporary (square).

Supplier: AT & T NATIONAL SPECIAL NEEDS CENTER

Portable Telephone Amplifier

The unit fits securely to most telephones, the adjustable volume control boosts the incoming volume by up to 30%. It works with or without hearing aids.

Supplier: AT & T NATIONAL SPECIAL NEEDS CENTER

Portable Inductive Telephone Coupler

A small, robust device which attaches to the earpiece of most telephones. Sound is picked up by the built in microphone, amplified and transmitted to the hearing aid via the "T" facility. It is supplied with an extension lead and miniature inductor which fits alongside a behind-the-ear aid, allowing the coupler to be used as a communicator or with two hearing aids at once. Powered by a hearing aid battery, if no sound is picked up to 2 - 5 minutes it automatically switches off.

Price: £31
Supplier: SARABEC ELECTRONICS

Fonadek Telephone Amplifier

An incoming telephone call is amplified by placing the receiver on the unit - allowing hands free conversation. No other connection to the telephone is needed. Volume is adjustable. British Telecom approved. Battery or mains operated available.

Supplier: WALSH FONADEK LTD.

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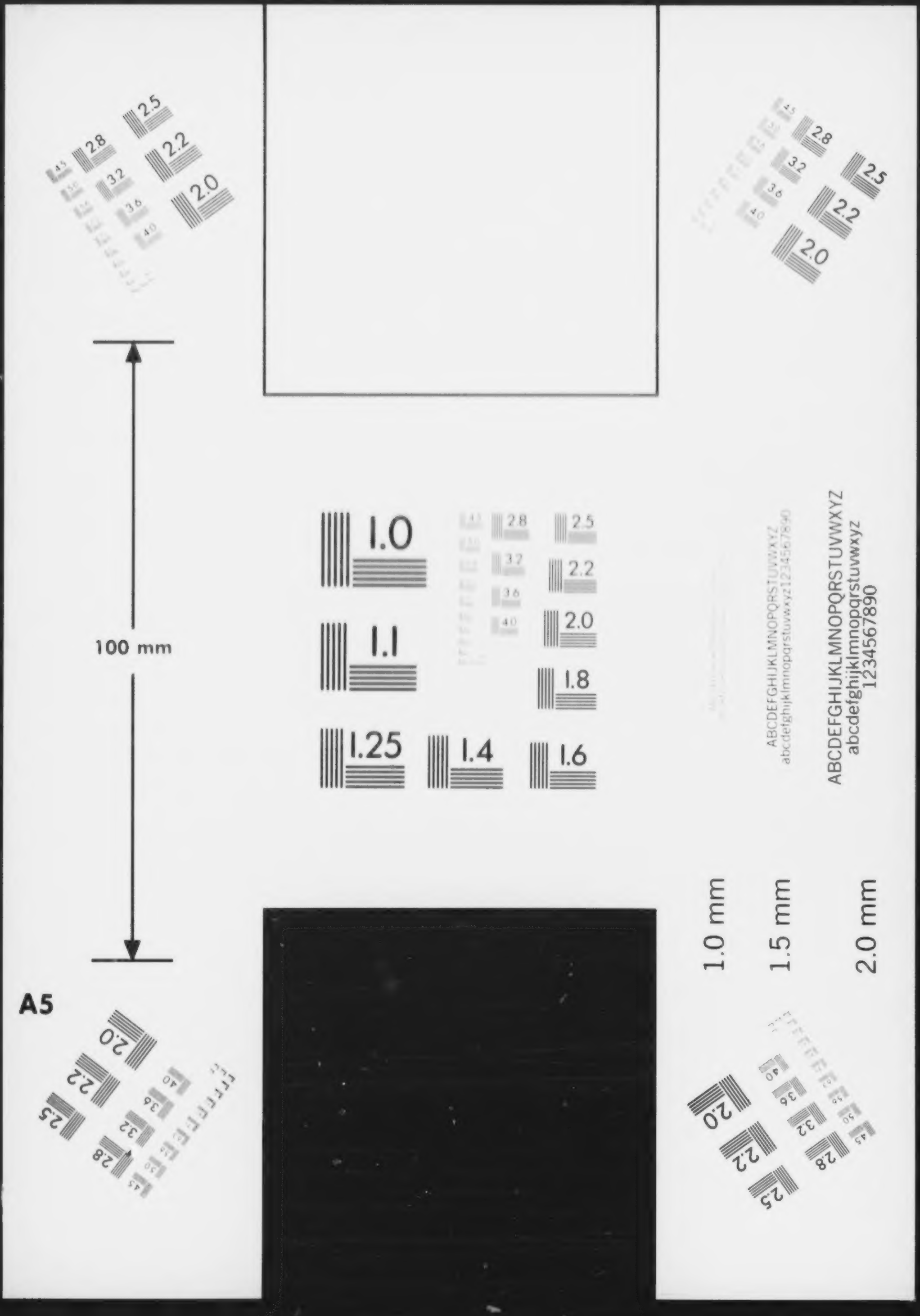

A5
100 mm
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
1.0 mm
1.5 mm
2.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

The Soundseeker ▲

A personal stereo amplifier for hearing impaired people. Applications include: TV/music amplification, either by connecting directly to one of the Soundseeker's auxiliary sockets, or by using the internal microphone; telephone amplification; inductive loop listening using the T-induction switch. The mixer slide allows a sound source to be selected from or mixed with other sources e.g. TV and conversation. Tone, balance and volume are all adjustable.

Price: £69.95 inc p&p
Supplier: SUMMIT

PE 475 Personal FM

The Phonic Ear PE 475 Personal FM System incorporates a wireless FM transmitter, an FM receiver which may be used with or without hearing aids and a single or multiple battery charging system.
The PE 475 System may be used in personal or group situations for wireless transmission of speech or external audio signals.
Separate volume controls are provided for controlling the level and mixing the signals of the FM transmitted signals and the environmental microphone. Low distortion and an equalized frequency response provide matching to hearing aids either through induction or direct audio input.

Price: £677
Supplier: PC WERTH LTD.

PE 485R Monaural FM Receiver

The Phonic Ear PE 485R Monaural FM receiver provides a monaural FM system for persons who are hearing impaired. This receiver is designed to provide control of output and frequency responses for use as a personal hearing aid or an FM receiver. It incorporates an equalized electrical response for use with behind-the-ear hearing aids.
Seven discrete output settings, five frequency responses, five gain range settings, and ear balance and attenuation controls. Independent volume controls for FM and environmental sounds are provided.

Price: £800
Supplier: PC WERTH LTD.

PE 461 FM System

The Phonic Ear PE 461 System is a wireless, binaural (stereo) FM amplification system designed for use by students who are hearing impaired. The system consists of a belt worn or lavalier style transmitter, a small, binaural FM receiver and a modular battery charger for charging from two to sixteen units.
The receiver may be used as a flexible personal hearing aid, or as part of an FM system. The receiver provides seven SSPL settings and five tone selections for each ear. The user may choose to receive either environmental sounds only, FM signals only, or a combination of both delivered through earphones, BTE transducers or headsets.

Price: £933
Supplier: PC WERTH LTD.

Pocket Audiometer

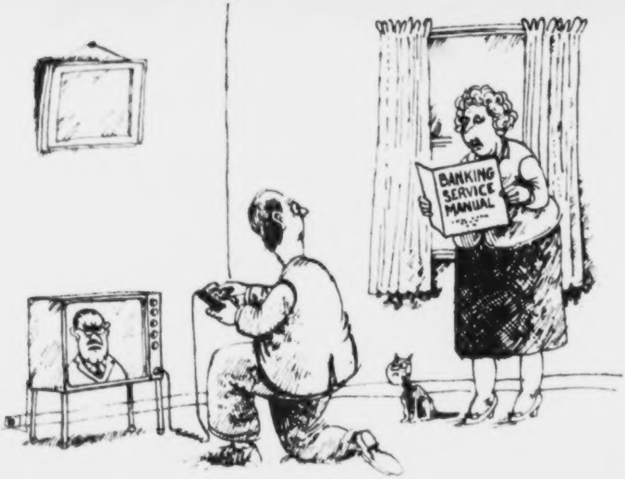
A pocket sized free field warbletone audiometer. The unit is designed as a means of quickly checking whether or not a patient has a hearing problem and may therefore need to be referred to an audiology clinic for diagnostic testing. Test centre frequencies (Hz)500, 1000, 2000, 3000, 4000, 5000.

Price: £145
Options: Battery charger and battery.
Supplier: JEDCOM MEDICAL PRODUCTS LTD.

Hearing Aids

Philips manufacture a range of hearing aids. The main features of these aids include: surface mounted push pull integrated circuits, active tone control, continuously variable AGC compression factors and high frequency emphasis knee point shift.

Price: £135 - £195
Supplier: LAVIS MEDICAL SYSTEMS LTD.


BANKING
SERVICE
MANUAL

'No dear, for loans over a thousand it says you have to get down on two knees.'

SPEECH IMPAIRMENT

99

Artificial Larynx ▲

This is a hand held speech aid for those who have lost the use of their larynx. The user presses the unit to his throat and forms words with his mouth, by rotating the head of the unit a softer or more strident sound is given. Supplied with battery charger, batteries (2), oral adaptor and carrying case.

Price: £315
Options: High power battery for greater volume.
Supplier: JEDCOM MEDICAL PRODUCTS LTD.

Companion

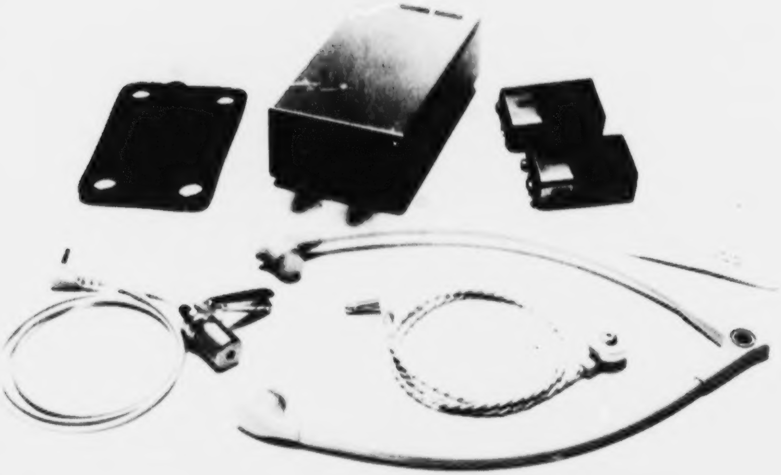
The Jedcom Companion is an intra oral larynx. It produces an electronically generated tone which is transmitted to the mouth of the user utilising disposable tubes supplied in sterile packs. The Companion is powered by a standard PP3 battery and weighs 85g. It is supplied with a case, carrying cord and spare tubes. There are separate volume and pitch controls.

Price: £125
Options: Battery recharger and battery.
Supplier: JEDCOM MEDICAL PRODUCTS LTD.

Micro Speech Lab

MSL is a package for microcomputers which allows in depth analysis of speech signals. The Speech Input Module allows speech input to be fully defined: the sampling rate, quantising rate, segment duration and trigger threshold are definable. The Waveform Module gives a digitised graph display of the waveform of the sample. The Audio Output Module gives digitised playpack of specified portions of the waveform. The Analysis Module aids in formant extraction and a general wave analysis. The Management Module provides a filing system for samples. Hardware requirements: 192k PC-DOS (IBM PC/XT/AT), colour graphics card. Supplied are: data acquisition hardware, microphone, headphones, software.

Price: US $1760
Options: Supplementary utilities.
Supplier: SRC SOFTWARE RESEARCH CORPORATION



Phonic Mirror

The PM505 Mini Delayed Auditory Feedback Unit is designed to assist in stuttering, disfluency and articulation disorders of speech. It is a small, wearable, battery powered solid state instrument with continuous controls for volume and feedback delay. Comes complete with a lightweight headset, two clip-on lapel microphones, a belt clip and carrying case.

Price: £469
Supplier: PC WERTH LTD.

◄

Visible Speech Aid

A speech and voice training system for Apple II computers. Displays of amplitude, pitch and rhythm can be traced on a monitor in response to signals picked up through the microphone. A target pattern appears on the monitor and as the student speaks, that pattern is also displayed on the screen for comparison.

Price: US $725
Supplier: SRC SOFTWARE RESEARCH CORPORATION

Exeter Lip Sensor (Standard)

The Exeter Lip sensor was developed to provide a lip-seal reminder to assist in the treatment of persistent drooling, persistent mouth-breathing and patients who have difficulty with the production of bilabial sounds. A lip electrode, connected to an electronic control unit, hooks onto the lower lip and contact by the upper lip on a central pi-electrode completes a circuit. The standard version of the Sensor emits a continuous tone when the lips are open and is silent when the lips are closed.

Price: £67
Supplier: BIO-INSTRUMENTATION LTD

101 Pausaid

An aid to speech therapy which assists the patient to monitor his speech more accurately and to be able to make the pauses required to adjust and improve articulation. The throat microphone detects when phonation is continuous and gives the patient auditory prompts to make regular stops in speech. The amount of phonation to be tolerated and the length of pause to be reinforced are adjustable, so is the sensitivity.

Price: £95
Supplier: JEDCOM MEDICAL PRODUCTS LTD.

▼

MICRONOSE

A hardware and software package designed to help treat nasality disorders. The hand held acoustic module plugs into the analogue port of a BBC microcomputer. The cartoon displays provide encouragement and visual feedback of nasal tone to the patient. Information related to performance is presented graphically for analysis by the Speech Therapist.

Supplier: MEDICAL PHYSICS DEPT, PINDERFIELDS HOSPITAL

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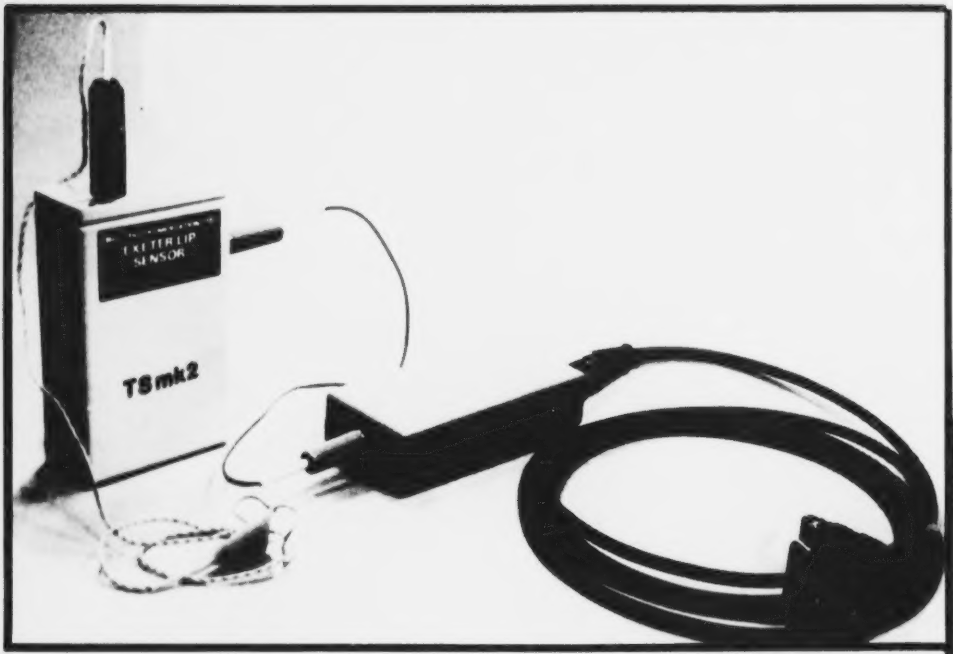

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Exeter Lip Sensor TSmk2

The TS Mark 2 version of the Exeter Lip Sensor has an opto-isolated output which can be used, via a suitable interface, as a touch-switch to operate computer software. The interface shown is for the BBC and switching is sensed via the analogue input. The lip electrode can be bent to suit either lip or tongue contact. Advice on interfacing can be obtained from the developer.

Price: £85
Options: BBC Interface
Supplier: BIO-INSTRUMENTATION LTD

Exeter Lip Sensor TS2PS

The TS2PS version of the Exeter Lip Sensor has been developed for use with a personal stereo cassette player. As with the standard model, a lip electrode is worn by the patient. When the lips are closed sound is received over the headphones and when the lips are open the sound is switched off.

Price: £99
Supplier: BIO-INSTRUMENTATION LTD

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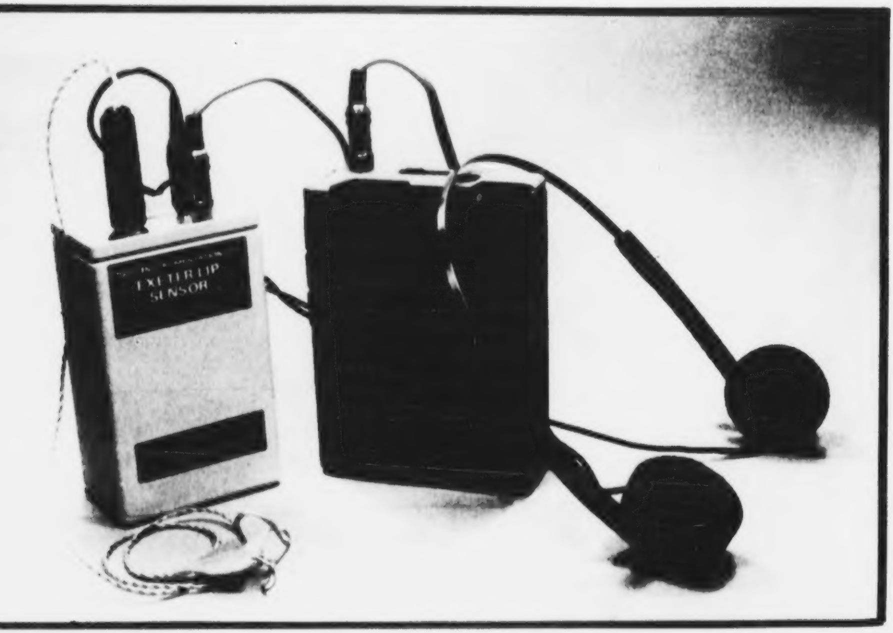


OTHER VOICES

In order to broaden the scope of this Directory we asked a dozen British practitioners/thinkers/tinkerers to share their thoughts, concerns, hopes. We emphasised they could use any means of expressing themselves. We are extremely grateful to the seven who obliged.

PATHWAYS TO EMPOWERMENT

My interest is in ways that lateral communication networks, new ways of organising information dissemination ('organisation-ware'), social inventions such as independent living centres, local databases, participative research projects, electronic mail systems, grassroots social movements and voluntary associations, distance learning projects, and self-help movements can contribute to empowerment for people with disabilities. Furthermore, I believe that the experience of disabled people in working for 'concerned' technological developments can be a vital contribution to the work of establishing a human-centred technology that benefits everybody.

Many minority groups are marginalised from the networks of communication within their society. This applies to disabled people as it does to women, unemployed people, ethnic minorities and rural villagers in developing countries. Being debarred or restricted in access to relevant information and the imposition of suspect data by outsiders are common experiences of oppressed groups. Disabled people are subject to just such oppression from suspect data which takes little account of their own experiences but is nevertheless utilised by able bodied professionals and others in support of policy measures targetted at disabled people. So it is no good just building up a computerised version of existing advice giving and rehabilitation services which already give considerable dissatisfaction to disabled people.

As one part of the independent living movement, disabled people are now seeking to establish information collecting and processing facilities under their control. They need to establish a capacity for fundamental research into issues that are important to them, and where there are gaps in current knowledge.

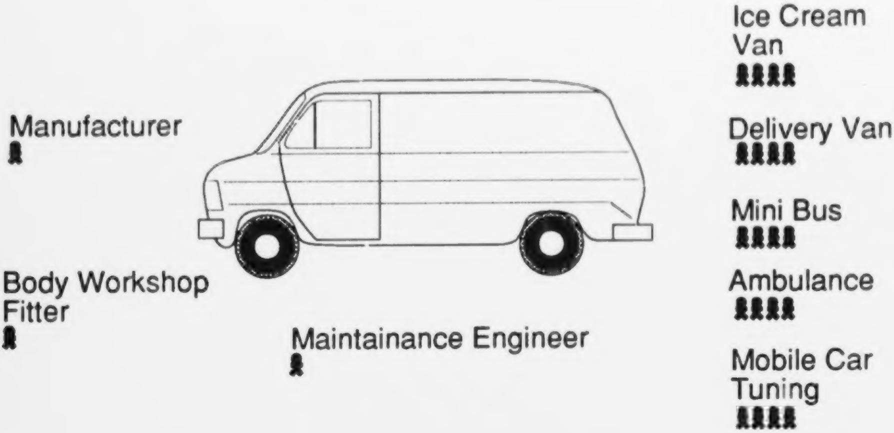
A concerned technology programme needs to look at the whole issue of communications and power, including how people get access to the resources to communicate and how they can gain some control over the processing and dissemination of that information. With the rapid growth of electronic communications networks we need to evaluate the benefits and costs to disabled people of the growth of this new area of life which is still basically designed for able-bodied living.

An urgent area of research is therefore into ways that existing information centres and research projects are being initiated and run by marginalised groups around the world. Many of these groups are pioneers in the use of information technology for social development. They are finding approaches that work and identifying the resources needed to make them work. The basic pattern is for lateral communications networks involving local databases easily accessible and understandable by concerned individuals, and easily able to put people in direct touch with each other. Effective use of information is closely related to the capacity to carry out or specify research projects. It is this pattern of development I suggest that the concerned technologist should foster within Britain.

Edis Bevan
Disability Studies Group
Open University

TOAD'S TECHNOLOGY

Remember Toad in "Wind in the Willows". The trail of destruction that he wrought with his car at the expense of everyone else on the road. Remember the days of the red flag. Remember the goggles and the scarf and the oil. The petrol engine has now taken up its correct place in our culture. Those few who have a particular interest in it have become the designers, customisers and maintainance engineers, whilst for the rest of us it is employed as a utility that we apply as appropriate, enabling society to function more efficiently and for the benefit of all people.


Manufacturer
Body Workshop Fitter
Maintainance Engineer
Ice Cream Van
Delivery Van
Mini Bus
Ambulance
Mobile Car Tuning

This is the view that we should have of Technology. For those who are interested, it is an end in itself. For those who need it, it is the tool that streamlines their problems, and enables them to function in today's society. Let us bear this in mind, but then strive to find the "model T", the "Beetle" and especially the "Transit".

Nick Hine
Information Technology Centre
Reading

RESEARCH NEEDS INTO COMMUNICATION SYSTEMS FOR THE HANDICAPPED

TODAY'S PROBLEMS NEED SOLUTIONS, TOMORROW'S NEED DREAMS

We have only just begun to scratch the surface of ways in which computer technology can assist the handicapped: their potential is enormous. It is dangerous, however, to be complacent - current systems are not particularly effective, and they are not being delivered to all those who would benefit from them.

Service delivery needs organisational changes and resources. Research needs inter-disciplinary teams with wide-ranging expertise - no one discipline holds the key to success.

Real advances will not come simply because of the use of greater and greater computer power. What is needed is an increased understanding of the real needs of the handicapped and the implementation of truly imaginative ideas.

In research it is unusual to be fully aware of the potential of good ideas, and it is difficult to predict accurately which ideas will be winners and which losers. We thus should not constrain our researchers too much. They must, of course, be fully aware of the clinical problems on which they are working, but it is vital that they be encouraged to dream:

> "Hold fast to dreams
> For, if dreams die,
> Life is a broken winged bird
> that cannot fly."
> (Langston Hughes)

Professor Alan Newell
University of Dundee

SEVERE LEARNING DIFFICULTIES

For those people with severe learning difficulties it may be that the application of microcomputers as educational devices is something of a dead end. For these individuals the difficulties of functional transfer of skills from a microcomputer learning environment to 'real life' are extreme, and possibly insuperable.

This may not turn out to be such a pessimistic conclusion, however. Such a realisation may encourage us to pursue the alternative - and potentially more valuable - goal of using micros as a form of intellectual prosthesis that can be used 'in situ'. Perhaps it is time to turn from expecting microcomputers to establish general cognitive schemas to be drawn upon at some indeterminate time in the future. It may be better to deploy such devices directly in the situations where they could usefully prompt appropriate actions and/or assist in required cognitive operations. This is, after all, how most of the rest of the population use new technology. We use it to assist us with tasks demanded of us that - left to our own devices - are either beyond us or require considerable effort.

As the use of microelectronic devices within the general population becomes increasingly commonplace, it will not be so odd to see individuals using portable micros to prompt, or compensate for, cognitive tasks which are presenting difficulty (e.g. budgetting, planning etc.). It seems inevitable that devices of the necessary flexibility and portability will soon be developed. What is less certain is whether we know sufficient about the cognitive problems of those with learning difficulties to be able to deploy such devices to maximum effectiveness. If such knowledge is acquired, new technology may yet turn out to be a powerful tool in combatting the social handicaps of those with severe learning difficulties.

Alastair Ager
Lecturer in Clinical Psychology
University of Leicester

NOT ONLY THE TECHNOLOGY BUT ....

It is now a relatively common experience for blind people to produce printed letters without any assistance. Developments over the past few years have produced wordprocessors with speech output that enable a blind person to use a conventional microcomputer keyboard, correct mistakes, arrange the layout of pages and accomplish all the other tasks associated with producing printed text.

What is clear from the experience of examples like this, and many others, is that there are four important stages in the introduction of new technology into the home, in education or at work:

- assessment of individual needs
- provision of equipment
- adaptation of systems for special needs
- initial and on-going training and support

In the UK, there has been a significant amount of funding (private and government) for the provision of equipment for disabled people. This is most welcome but, without similar funding levels for assessment and training in particular, the high potential of new technology will not be fully realised. Indeed, there are examples of people who may appear to have overcome a communication barrier, but in reality have been provided with an inefficient and frustrating technological 'solution'.

Although there is still the need to exploit new developments in technology and to make everyone aware of these developments, experience from the past few years indicates that the full benefits for disabled people will only be achieved if similar advances are made with the assessment of appropriate technology, and training is provided for both functional use of the technology and its application to individual needs. Centres that can provide assessment and/or training have emerged (such as the ACE Centre, Hereward College Access, Communication Aids Centres, and Royal National College for the Blind). However, there remains much to be done if new technology is to be fully exploited.

Tom Vincent
The Open University

EDUCATIONAL AND THERAPEUTIC APPLICATIONS OF THE NEW TECHNOLOGY WITH PEOPLE WITH SEVERE AND PROFOUND MENTAL HANDICAP
MEETING OF THE ROYAL SOCIETY OF MEDICINE - FORUM ON MENTAL RETARDATION - HELD IN LONDON - 6 APRIL 1988

At a recent meeting of the Royal Society of Medicine concerned with the use of the new technology with people with severe and profound mental handicap, I was left with the feeling that the technology was accelerating rapidly out of sight as professionals attempted to come to terms with it. At both the theoretical and practical levels, I felt that much groundwork had yet to be done if such innovations were to be integrated in practice and not be merely peripheral to the main activity. It was interesting to note that only limited attention had been given to psychological theories underpinning cognitive development through the use of micros, and indeed that there is considerable controversy over appropriate theoretical models to use. An important step forward would be to discuss this issue in its own right. Are we to opt for applied behaviour analysis approaches, premised on Piagetian and/or information processing models? Where would our practice differ if we chose one model rather than the others? To what extent can such models be meaningfully integrated? Another meeting please!

Dr James Hogg
Hester Adrian Research Centre
University of Manchester

TECHNOLOGY - FRIEND OR FOE?

Today's rapid technological changes should mean advances for deaf people. Technology can be the great leveller, allowing disabled people equality with able bodied people in access to services.

The telephone - ironically invented through experiments by Alexander Graham Bell as he tried to perfect an electrical hearing aid for his wife - has till recent years been totally inaccessible to profoundly deaf people. The advent of electronic keyboard terminals, however, has enabled communication between deaf people using similar terminals - and between deaf and hearing people through services such as the RNID's Telephone Exchange for Deaf People.

Hoped for improvements in hearing aids are often talked about. While some improvements in physical design and fidelity could be made with present technology any real breakthrough must await greater understanding of the nature of hearing impairment, particularly how sound could be 'processed' to maximise discrimination by impaired ears. Considerable strides are, however, being made with one radical hearing aid for totally/profoundly deaf people - the cochlear implant. As better ways are found to stimulate the nerve of hearing with electrical impulses, users may experience a wider and more explicit range of sounds.

Technology is (usually) an evolutionary rather than revolutionary process. The subtitling of TV programmes provides one such example. Its use has increased slowly throughout this decade following the inception of the teletext service, but the financial constraints limit the amount of subtitling time. Technology is helping by producing better equipment so that more programmes can be subtitled in the same amount of time. Experiments continue in the preparation of subtitles in real time - a vastly more efficient process and one with great potential benefit.

Deaf people have already benefitted from the wide availability of teletext TV sets. As a direct result of the popularity of these sets, however, separate teletext decoders (the only way that permits recording of subtitles) have all but lost their market. Hopefully within the next few years a new generation of video recorders will overcome the problem by allowing direct recording of subtitles.

In some areas progress is slower and more difficult than many people imagine. Automatic speech recognition by computer is one such area. Although computers can now be trained to recognise up to several thousand words for specialist applications they are still a long way from coping with the wide variety of voice patterns encountered in conversational speech. In the long term, when such possibilities are developed, telephone communication is just one area which will be revolutionised.

There are many other areas of technology which could yield fruitful development. We are, for instance, likely to see greater use of interactive video in education and much more efficient information transmission, both on fibre optic cables and through the Integrated Systems Digital Network (ISDN) than is possible over conventional telephone lines. Virotactile aids could be just one beneficiary of the exciting superconductivity research (a seemingly unrelated subject) through the potential development of exceptionally efficient motors. And what of robotics? Will the hearing dog owner of the future have the choice of a mate of K9?

But perhaps the most beneficial change lies not in the technology itself but in improving access to products through simplifying channels of supply. Wider availability of products in the market place may come with a new deaf consumerism which is currently developing. And greater competition to supply an expanded market of deaf people could ultimately lead to a better deal for deaf people.

Brian Grover
Director of Communication Services
The Royal National Institute for the Deaf

TECHNOLOGY FOR FAILURE!

As far as communication aids for conversation are concerned, effective implementation of technological solutions is too rarely a cause for celebration. Getting our sticky little mitts on the right box of tricks is important and can be difficult. However, having successfully negotiated this obstacle, we find we have just managed to get one foot on the bottom rung of the ladder. This is a big step but we cannot afford to become giddy with excitement when we still have so far to go.

Provision of communication aids is very patchy and statutory funding from the public purse increasingly uncertain as NHS budgets are cut and "squeezed". We might well squeal for the hard-ware but there is also need for a massive improvement in the availability of services to support the technology. We don't give a child the latest tennis racket and expect, without practice, coaching or appreciation of the rules of the game, that state of the art sports equipment will improve her service. However clever the design of a communication aid, it cannot supply an apposite comment or deliver a witty riposte, articulate expression may be enabled but actual performance is ultimately dependent on the skills, abilities and inclinations of the user. Similarly, motorways are not accessible to those who use powered wheel-chairs, and a powered communication aid does not give automatic access to the fast-lane of fluent conversation.

Technology for failure is no use at all. We need to do more than simply shove machines in front of people. Expectations of the power and potential of technology will otherwise be unmet and will be replaced by disappointment, frustration and anger. Technological solutions will lose credibility however valuable they may be in theory.

Liz Panton
Communication Aid Centre
Newcastle upon Tyne

'I fed all your symptoms into the computer, Mr Bilkins, and it died.'

Audio Hypo-Count

This blood glucose meter also reads BM sticks. Readings are given in both audible and visual form. The audible readings involve buzzing in six different reporting blocks.

Price: £80 + VAT
Options: Strip guide, BM sticks.
Supplier: HYPOGUARD (UK) LTD.

Talking Hypo-Count

The Talking Hypo-Count 'B' Monitor is designed to allow diabetics who are blind or partially sighted to measure their blood glucose levels. The monitor reads BM test BG strips. The built in voice synthesiser advises the user of the stage reached in the program and reads out the result. It also gives a visual display of the result.

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Price: £130 + VAT
Options: Strip guide, BM test BG strips.
Supplier: HYPOGUARD (UK) LTD.

Audio Glucochek SC

A blood glucose monitor which gives the results in the form of electronic tones. The monitor uses any chemistrip bG glucose test strip and a guide is provided to assist in the proper placement of the blood sample on the test strip. Included are: an auto lancet and needles, 25 test strips, cotton wool and alcohol applicator.

Price: US $399.95
Supplier: LS & S GROUP INC.

Talking Beta Scan

A voice output blood glucose meter for measuring whole blood glucose with Beta Scan Trend strips. The strip guide assists in the proper placement of the sample on the test strip. The meter is automatically self calibrating and gives an audible signal when calibration is complete. By pressing the speaker button the result is announced in an electronic voice. Range: 0 - 399 mg/dl. Powered by rechargeable batteries (included).

Price: US $479.95
Supplier: LS & S GROUP INC.

Digi-Voice

A plug in speech output module for the following blood glucose analysers (available separately): LifeScan Glucoscan 3000, LifeScan One Touch and the Boehringer Mannheim Accu-Chek. Powered by a single rechargeable 9v battery; size 6 x 3.1/2 x 1.1/4". The model of analyser Digi-Voice is for must be specified.

Price: US $420 + shipping
Options: Packs of 50 test strips for the Glucoscan 3000 and the One Touch.
Supplier: SCIENCE PRODUCTS

Pump for Diabetics

The pump was developed as a result of the NASA directed research program into miniaturised fluid control technology. The pump is programmed for each individual and delivers "short acting" insulin continuously in tiny amounts.

Supplier: MINIMED TECHNOLOGIES

W.C.
HAVE YOU WASHED YOUR HANDS?

Talking B.P. and Pulse Monitor

This talking unit gives voice guided, step-by-step instructions. Blood pressure and pulse readings are automatically voice announced and displayed in large LCD numerals. Errors and low battery power are also announced. The cuff automatically inflates and deflates. Comes with batteries and carry case.

Price: US $119.95
Supplier: LS & S GROUP INC.

Blood Pressure/Pulse Monitor

Slip the cuff on the arm, roll shut, and it is ready for use. By pressing the start button the cuff can be automatically inflated or deflated. Both systolic and diastolic readings are shown, with pulse rate, on an easy to read digital display. A range of models, variously priced are available.

Price: Various
Options: AC Adaptors
Supplier: OMRON HEALTHCARE

Heart Watchman

A speech and digital output heart rate monitor. Designed to encourage safe exercising, the Watchman weighs 78g and features wireless transmission from ECG chest electrode sensors to the receiver. Once the upper and lower limits of exercise heart rate are programmed in the Watchman will announce through the earphone whenever the exercise becomes too strenuous.

Price: US $254.95
Supplier: LS & S GROUP INC.

Low Vision B.P. Monitor

A blood pressure monitor which gives the results on a 23mm high LCD. Systalic and diatolic pressures as well as pulse can be measured. Requires 4 'AA' batteries.

Price: US $84.95
Supplier: LS & S GROUP INC.

Medimax 30

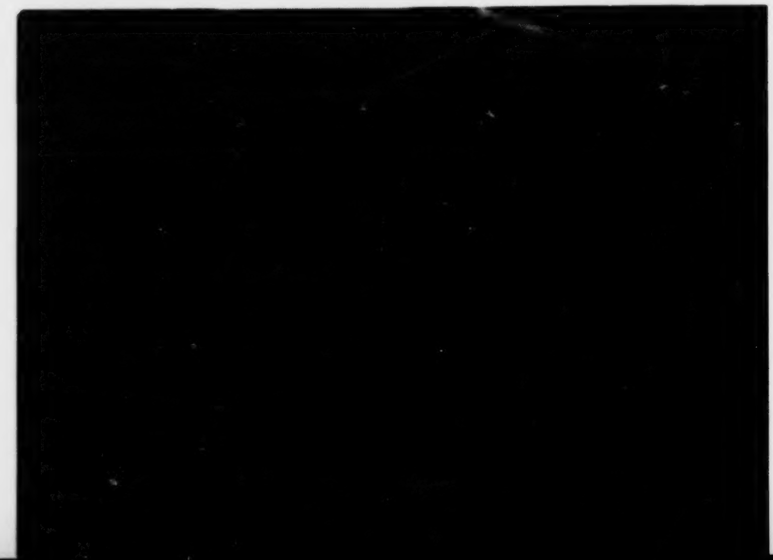
A coin operated self checking device that produces blood pressure readings in 30 seconds and also a printed record. The user places their arm in the self adjusting cuff, the rest of the procedure is automatic.

Supplier: ADVANCED LIFE SCIENCE

Health Check

A cuffless blood pressure monitor which gives both digital and bar graph displays of results. Both systolic and diastolic pressures are measured by placing a finger in the ring and pressing the switch. Results are given in less than one minute.

Price: US $74.95
Supplier: LS & S GROUP INC.



Musical/Vibration Back Rest

The musical back rest produces vibrations in time to the music when plugged into a stereo system. Size: 533 x 381 x 95mm.

Price: £90
Supplier: COMMUNICATIONS FOR THE HANDICAPPED

Musical Vibration Bed

Six 203mm diameter speakers are set into the base of the bed, which has a 51mm thick PVC covered flame retardant foam mattress. The bed has a built in cassette player, battery pack, recharger and graphic equaliser. The total output is 30 watts. The sound can be distributed to all or to individual speakers. Bed size: 1.52 x 0.91m.

Price: £603.70
Supplier: TOYS FOR THE HANDICAPPED

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Emed-System

Emed is an electronic measurement system for recording and evaluating pressure distribution on flat and curved surfaces. The system enables static and dynamic measurement with a maximum speed of 150,000 sensors/second. It records the pressure (in N/cm2) the time (in ms) and the location (in coordinates).
The measurement method operates with capacative sensors (in sensor platforms, single sensors, flexible sensor mats or sensor insoles) and are displayed as a conform colour picture on a monitor or on a print out from an ink jet colour printer. The pressure distribution pictures can be stored on floppy discs and analysed with assistance from Emed software on a PC. The basic system includes: platform, monitor, keyboard, printer and adaptor; the mini system includes a telecontrol but not a keyboard.

Price: Basic system DM 50000, Mini system DM 20000
Supplier: NOVEL GMBH

Bio-Feedback Limb Monitor

Designed to assist in re-education of movement therapy, the monitor uses renewable pressure pads of various types and shapes and provides audio/visual feedback corresponding to the pressure applied. The audio output can be reversed, providing a continuous beep until pressure is successfully applied to an on/off pad. The monitor is battery powered and lightweight. Three kits are available: I basic kit, II this has a wider range of pads plus an and/or connector, and III which is a melody/bleep monitor designed for children's therapy.

Price: I £200, II £250, III £120
Options: Threshold device, light sensor, handgrip sensor.
Supplier: SHIELD MEDICAL

Limb Load Monitor

A feedback tool for weightbearing training, the Limb Load Monitor consists of a thin shoe insole and an auditory feedback system within a control box. The insole is a sensor which detects the changing load applied through the limb. The device is set for a desired weight and a variable auditory signal indicates the difference between the actual and desired load. An output jack allows weightbearing patterns to be recorded.

Price: US $595 inc 4 insoles and earphone
Options: Custom made insoles available, prices may vary (approximately $75).
Supplier: E. Q. INC.

Muscle and Gait Analyser

A telemetry system used to measure the degree and location of abnormal muscle activity. Sensors attached to the patients legs send wireless signals to a computer. The system records, measures and analyses muscle activities in the limbs and spine, producing a picture of gait patterns to assist the physician/therapist.

Supplier: L & M ELECTRONICS INC.

Micro-Ex

The Micro-Ex is a functional electrostimulator for use in the field of stroke rehabilitation. The Micro-Ex has two output channels allowing exercise of two muscle groups simultaneously. The Micro-Ex can assist gait by the use of a footswitch which triggers stimulation of the lower leg muscles.
The equipment is light (250gms), portable and powered by a PP3 battery.
The Micro-Ex comes complete with electrodes, connecting wires and footswitch.

Price: £295 Ex VAT
Supplier: ENABLEMENT TECHNOLOGY LTD.

Talking Pen

The Talking Pen is designed as an aid to developing motor coordination for example handwriting skills. It consists of an electronic pen with an infra-red light source at its tip. When the pen is on a light coloured surface, the fibre-optic sensor detects reflected light, triggering a buzzer to let the user know he's on the right track. The pen is supplied with a six second cassette loop on which instructional feedback can be recorded, sample patterns, connector for a cassette or radio, battery charger.

Supplier: TRIAD MANUFACTURING CO. LTD.

Thompson Reaction Time Switch

A hand held or desk top remote switching unit designed to test and monitor a patient's manual dexterity. Hardware requirements: BBC, monitor and disk drive. Results are displayed graphically on the monitor. Additional software is available.

Price: £99.50
Options: Two programs available.
Supplier: DIGITAL SERVICES LTD.

Visiscreen

An ocular screening system for the analysis of retinal reflexes. An electronic flash sends light to both eyes simultaneously, light is reflected back from the retina, through a telephoto lens to a photorefactor. The retinal response to the flash is analysed and coloured images of the subjects eyes are produced. A skilled observer can then determine whether any problem in ocular alignment exists.

Supplier: MEDICAL SCIENCE COMPANY

Digital Fever Thermometers

To use this thermometer is simple to use - just press a button and put under tongue, armpit, etc. and the thermometer bleeps when temperature is ready to read on digital display.

Price: £7.95
Supplier: OMRON HEALTHCARE

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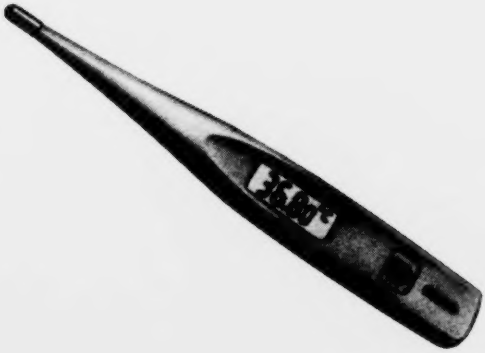

Electrically Heated Appliances

Woollen and leather gloves, mittens, socks and stump socks with internal heating elements. Used for relief/treatment of circulatory disorders such as Raynaud's Syndrome. Mains transformer unit and rechargeable batteries are supplied. Individually made items for finger or toe amputees are available.

Supplier: VACUUM REFLEX LTD.

Weight Talker

Battery powered personal scales which announce weight and how much has been gained/lost each day. The Weight Talker can be programmed for use by five people. The "on" and "memory" keys are activated with light pressure.

Price: US $93.95
Supplier: LS & S GROUP INC.

'It not only tells you your weight but also if your feet need washing.'

MOBILITY

The World's Most Intelligent Steering Ball

A ball shaped control which allows finger tip operation of indicators, headlights and horn on the 4-way model, and, on the 9-way model, functions such as wipers, washers, screen heaters, etc. The ball and an infra red transmitter are attached to the steering wheel, the receiver head is usually door mounted and the main switching unit connects to the vehicles wiring loom.

Price: 4-way unit £259.50 + fitting
9-way unit £339.50 + fitting
Supplier: BRIAN PAGE CONTROLS

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Joystick Steering

Each motorist requiring a steering system is provided with a customised solution to their needs. This is achieved through individual assessments using electronic equipment which indicates the precise layout of the steering system required. The steering system which is produced can be fitted to most vehicles with rack and pinion steering on either the left or right hand side (or elsewhere if needed). Each system comes with a dashboard display which gives visual and audio information on its performance. The illustration shows a joystick steering system operated from the right shoulder.

Supplier: STEERING DEVELOPMENTS LTD.

Vehicle Controller

Named the Unistick, this is an airplane - like joystick which allows a driver to control a vehicle with one hand. Unistick is based upon the steering mechanism used in the Apollo lunar landings of the 1970s.

Supplier: JOHNSON ENGINEERING

Advanced Wheelchair

A prototype lightweight wheelchair based on aerospace technology. The chair weighs 11.3Kg and is collapsible. The chair is the result of a Langley/University of VA project. Commercial applications are under consideration.

Contact: DR MCLAURIN, COLIN.

ROWCYCLE

A low profile tricycle with a large padded seat. The ROWCYCLE is propelled not by pedalling but by a rowing action.

Supplier: T & S MOTION & SPORT

The Squirrel

An electric wheelchair which has a separate motor on each wheel. This enables it to be both highly manoeuvrable and able to cope with uneven terrain and slopes (up to 1 in 4). Steering, braking and speed are controllable at all times. Battery, charger and cushions are included.

Price: £985
Options: Kerb Climber under development
Supplier: CHAIRPOWER LTD

TELEPHONE EQUIPMENT

Voice Dialler

Can store up to 200 numbers with provisions for two emergency numbers. Voice activation allows for the storage of 100 numbers.

Supplier: INNOVATIVE DEVICES

Voice Activated Phone

Made by Southwestern Bell, this phone will dial a number as it is vocally dictated. The memory can store up to 63 names and numbers which can be dialled on voice command. Other features include: memory scrolling to review names and numbers; battery back up and LCD confirmation of voice command.

Price: US $349.95
Supplier: LS & S GROUP INC.

Voice Dialler Telephone

A voice recognition autodialler telephone. Speak a name the the Dialler repeats it before dialling the number. It features a programmable directory with a capacity for 100 names and 200 numbers (one for home, the other, work); automatic selection between home and work numbers; personal security code to prevent unauthorised use and emergency one button dialling for the doctor, police, etc.

Price: US $199.95
Supplier: LS & S GROUP INC.

The LST9A Loudspeaking Telephone

The LST9A comprises a loudspeaking unit and separate microphone and is for use with Environmental Control Systems.
The telephone connects to a standard British Telephone connector point and is approved by British Telecom for connection to their network.

Options: Extension kit comprising a remote loudspeaker and microphone.
Supplier: HUGH STEEPER LTD.

Directel

Directel provides a full telephone service for people with severe motion impairments. The user can place, receive and disconnect calls by blowing into the plastic tube. Directel connects the user to the operator who dials the call. The unit comes with an adjustable microphone and built in speaker. It plugs into the mains and has a built in rechargeable battery which provides four hours of service in the event of a power outage. Directel can be fitted with a variety of special switches, microphones and headsets.

Supplier: AT & T NATIONAL SPECIAL NEEDS CENTER

Alert-A-Phone

This phone has ten large red emergency symbols on white, touch sensitive pads. The user presses the appropriate symbol and the number is automatically dialled. Also functions as a standard phone.

Price: US $64.95
Supplier: LS & S GROUP INC.

Webcor

This is a jumbo button telephone with large character size; it has a 9 number memory - each number can be dialled by pressing one button.

Price: US $49.95
Supplier: LS & S GROUP INC.

Finger Guide

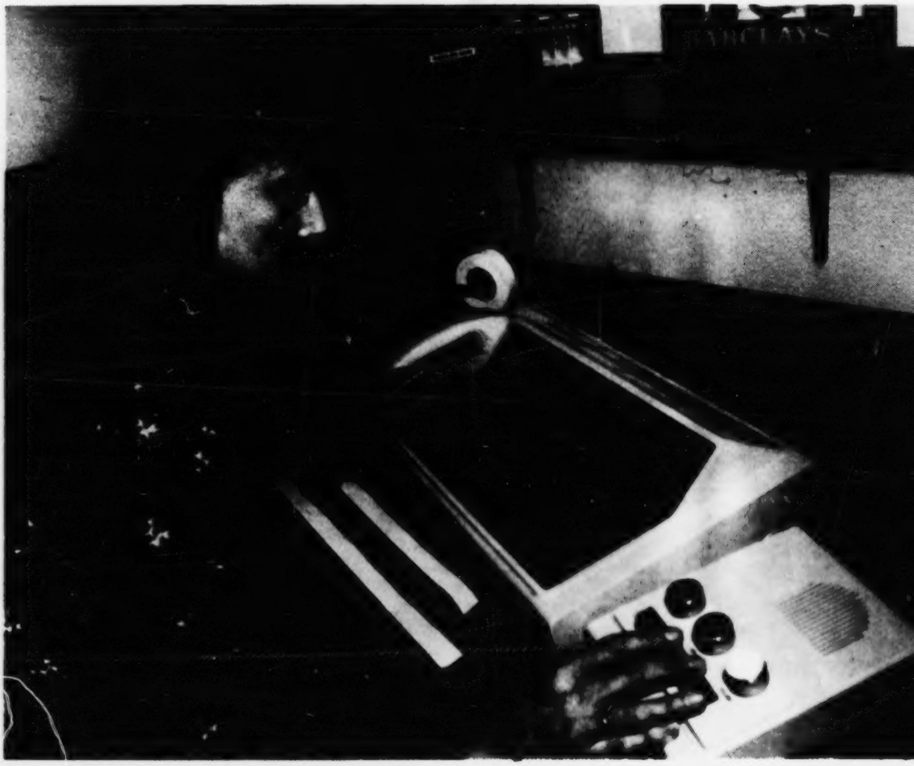
A self adhesive finger guide for the Yeoman press button telephone.

Supplier: BRITISH TELECOM (contact local sales office)

Falck 4410

A supplementary telephone keypad fitted with large buttons. Up to nine numbers of 20 digits can be programmed as abbreviated numbers - giving one key dialling. Other features: extended search time accepts pressure on key longer than normal, trembling filter avoids uncontrolled repetition, last number redial. Keypad size: 177x143mm.

Supplier: FALCK PRODUKTER A/S



Monarch ▲

This is a modified British Telecom switchboard which provides synthesised speech output for the visually handicapped operator.

Supplier: RNIB (applications handled under the aids to employment scheme)

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ISDX Visually Handicapped Operators Console Attachment

Designed for use with Plessey digital PABX systems the Visually Handicapped Operators Console Attachment is a device which allows information and messages usually displayed on an LCD to be audibly imparted.
The equipment consists of a control box which contains a power supply, CPU and a speech synthesis unit; A keypad consisting of 8 keys and 8 switches, and a footswitch.
The control box intercepts the data stream from the PABX that generates information screens on the operators console LCD and converts it into synthesised speech. The keypad with its switches and keys allows the visually handicapped operator to have as much or as little information voiced as they feel is necessary.
The speed and pitch of the synthesised speech may also be varied to suit. The footswitch is used to repeat messages which may not have been clearly heard.

Price: On application
Supplier: G.P.T. COMMUNICATION SYSTEMS LTD.

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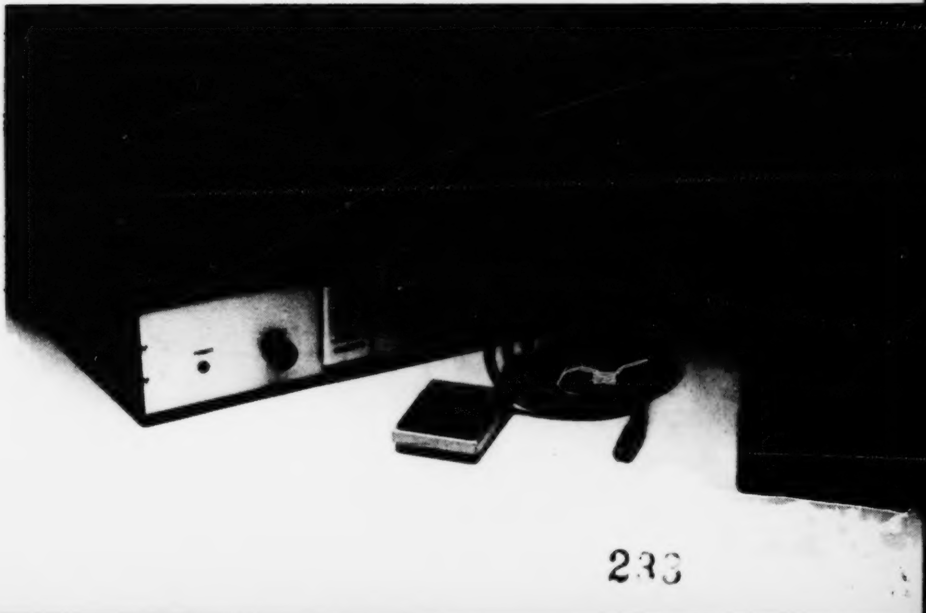


Dynamic Telephone Directory ▲

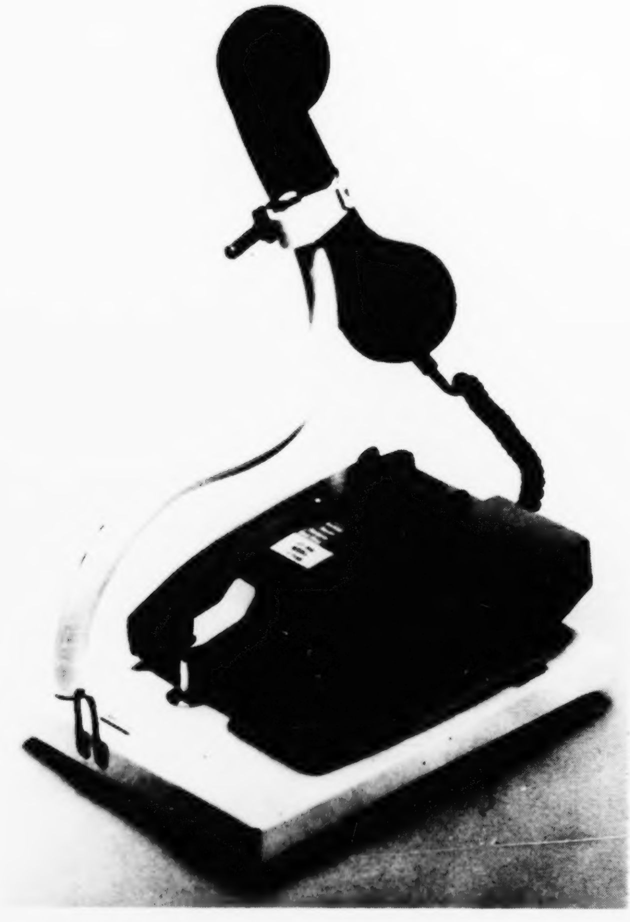
A small compact unit designed specifically to stand adjacent to the PABX switchboard and handle enquiries relating to incoming telephone calls. The unit will store up to 1,000 entries and allow searches to be made against name, extension number, job title, department or by 1 of 16 user-definable codes.

Supplier: VANDERHOFF COMMUNICATIONS LTD

CDSS Operator

The Operator is a 50 memory telephone dialler. A QWERTY keyboard and LCD enable you to type in the name and number of each person you may wish to call. To place a call, the user types in the name, the Operator locates that number and automatically dials it.

Price: £179 + VAT 23
Supplier: CLOSED DOOR SECURITY SYSTEMS



Holdaphone ▲

The receiver can be removed from the telephone and permanently clipped onto the stand which can be adjusted to different heights and angles. A further mechanism is released to take an incoming call or dial out and replaced after use. Models are available for a number of phones including the Statesman (illustrated).

Supplier: D.A. BANCROFT

Seager Wedo Support

This device fits around the handset and allows it to be balanced on the shoulder.

Supplier: SPICERS LTD

'Now, thanks to this, I don't miss any obscene calls when I'm out.'

Phone-Mate

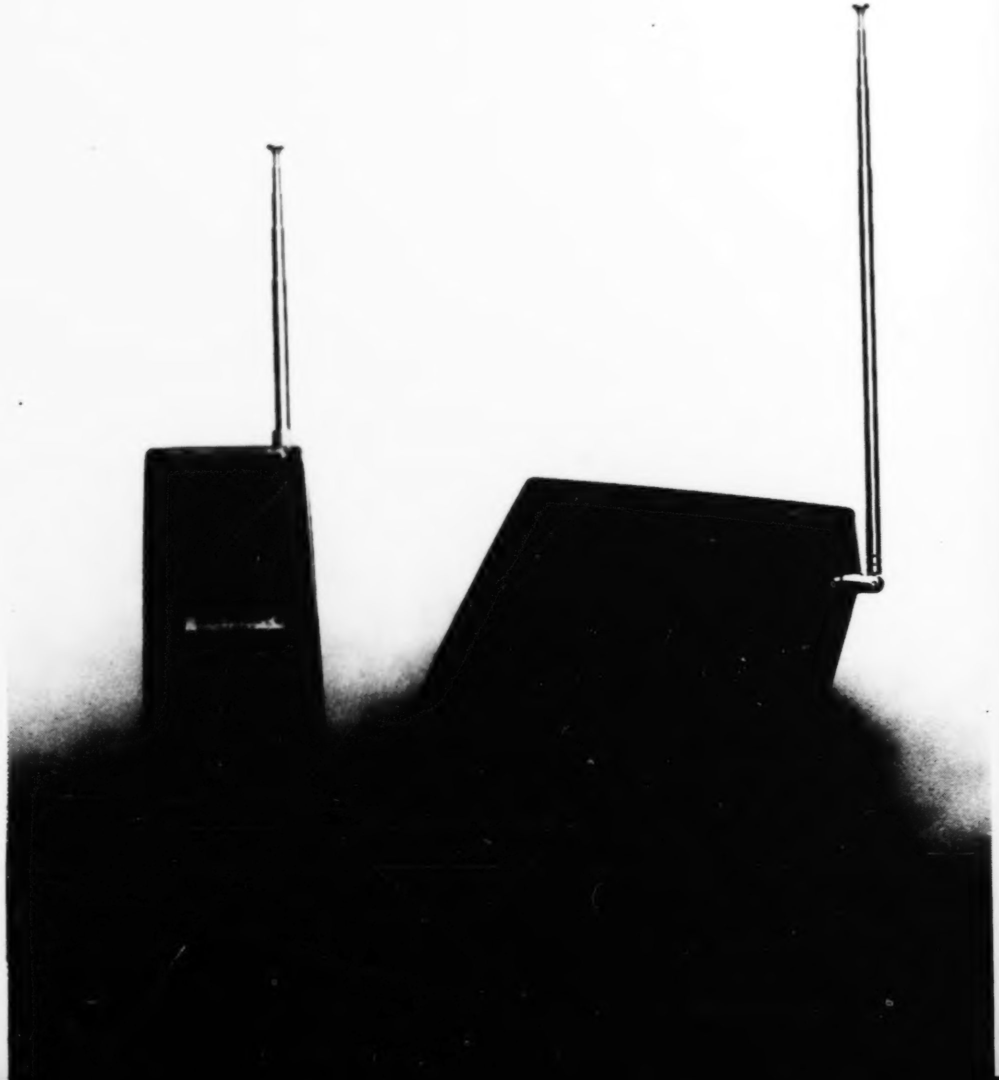
A talking telephone answering machine which allows many functions to be carried out with a single button press. The Voice Prompter gives step by step instructions on how to use the machine and the day and time of each message received are spoken; the Phone-Mate also has a 24 hour clock.

Price: US $179.95
Supplier: LS & S GROUP INC.

Freeway

This is British Telecom's latest model cordless telephone, featuring last number redial, handset paging from the base unit and follow-on call facility. This is only available as an extension to a direct exchange line.

Supplier: BRITISH TELECOM (contact local sales office)



ENVIRONMENTAL CONTROL

Portable Environmental Control Systems

These systems rely on the transmission of impulses via the household ring main from 'Master units' to 'slaves', which are plugged into ring main sockets and to which electrical appliances may be connected.
Master Control Units:
MS 1003. This is designed for the disabled person who still has the use of their hands. It allows the user to control 16 slave units.
MS 1006. This is an 'intelligent' unit which is driven by a microprocessor. It is intended for use by the severely disabled, and has a single switch input. The front panel has a display of 16 LED's, each of which depicts the appliance connected at that 'address'. This unit is also able to learn, and remember, the speed of the user.

Price: On application
Options: An Intelligent Alarm. A plug in slave for 13 amp appliances.
Supplier: SYNAPTICS LTD.

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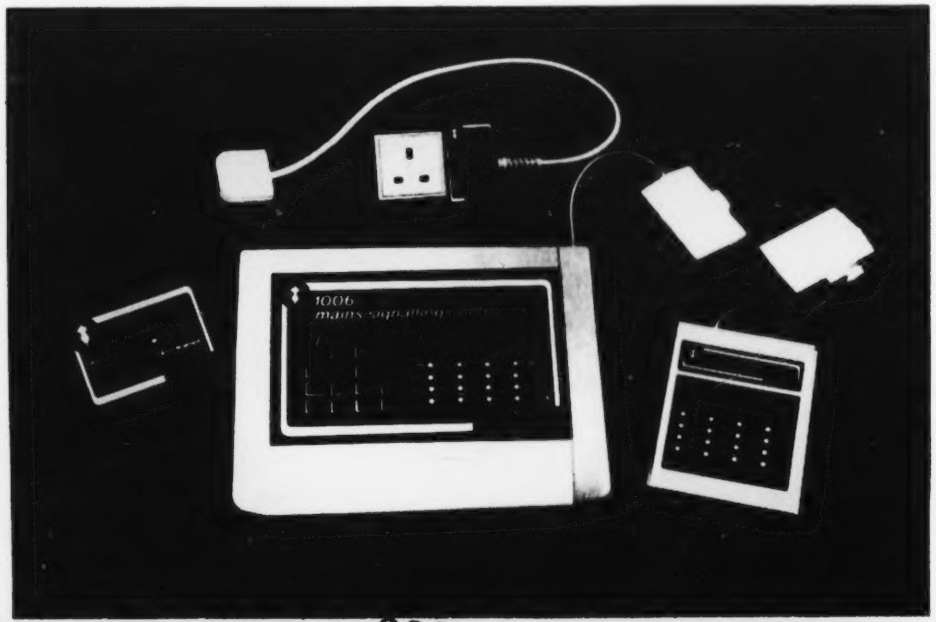

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Regenesis Environmental Control System

Developed by the Neil Squire Foundation, the Regenesis E.C.S. is a modular system comprising a basic unit, three modules and one sub-module. The basic unit has five channels of low voltage momentary or latching switches, three of these can also be used as switched 120v AC power. Modules: Telephone Control, X-10 module - controls 5 120v AC appliances remotely, infrared TV module and the infrared VCR sub-module. The system is controlled by any dual or single switch and the modules simply snap onto the top of the basic unit.

Price:	Basic control unit CAN	$550
	Telephone control	$595
	X-10 module	$495
	IR TV module	$395
	IR VCR sub-module	$375
	Full package	$2295

Supplier: REGENESIS DEVELOPMENT CORPORATION

Personal Butler

A voice activated environmental control system which can be operated by up to 4 users. The system uses X-10 remote control modules to operate electrical appliances via the domestic wiring - up to 32 by voice, a further 32 by the timer and up to 256 from the control panel. The built-in speaker phone has an electronic address book - also voice controlled. The Personal Butler will interface to any PC, enabling information to be up/down loaded (e.g. disk storage of the Butler's memory). The other main features of the system are: a human voice quality speech synthesiser which can give acknowledgement to spoken commands and deliver pre-timed messages such as an alarm call and an infrared sensor for detecting intruders. The price includes 1 lamp module, 1 appliance module, training cassette and manual.

Price: US $1495
Options: Voice mouse - software for voice control of computer programs (IBM and compatible) $189, Appliance modules $15-25.
Supplier: MASTERVOICE

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Asaflex

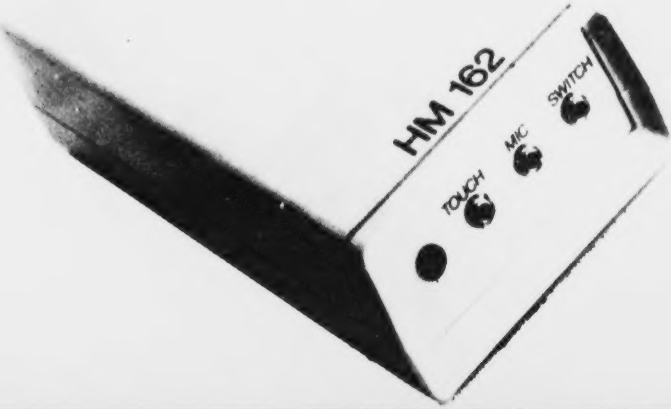
Asaflex is a highly reconfigurable single switch input system. It is not a single switch, but a system of switches incorporated into one unit. The unit is connected to two special lightweight sensors which can be attached to various parts of the body. The system can detect muscle tensioning, relative movements, touch, eyeblink, sound, etc. It is designed to meet the changing needs of one individual or the varying needs of several individuals.

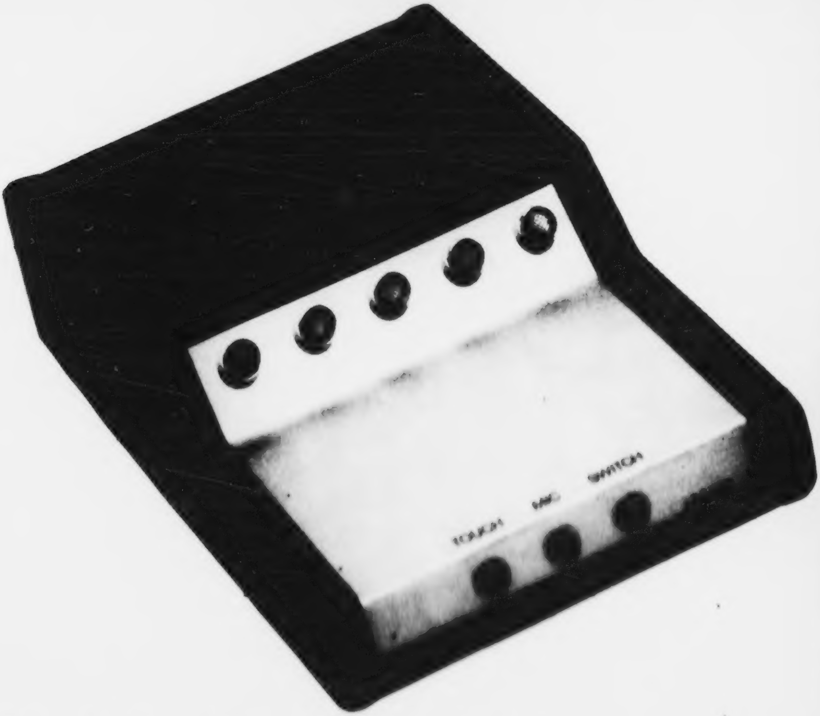
Price:	US $495
Supplier:	ASAHEL ENGINEERING INC.

HM 162

The HM 162, with its built-in CIF switch, gives the user control over any electrical appliance. Control is by means of any of the range of activation sensors - which simply plug into the front of the unit. It can be switched between two modes of operation: momentary or latching. Activation sensors include skin contact, touch plate, throat microphone, exhalation microphone, special microphone and hand operated switch.

Price:	On application
Supplier:	AREMCO





HM-405 Steering Unit ▲

Equipped with a built-in CIF switch, the steering unit is both an environmental control and communication device. It has five running lights, which automatically illuminate in sequence left to right, and can control five electrical appliances. To switch an appliance on/off the user operates their activating unit when the corresponding light is on (symbols of the appliances are placed below the lights). By using the toggle switch on the back of the unit control of the appliances is disabled, allowing the unit to be used as a simple communicator, again by using the running lights and symbol overlays. Speed of lights, sensitivity, sustain and delay are all adjustable.

Price: On application
Options: Activation units include: skin contact, touch plate, throat microphone, exhalation microphone, special microphones, hand operated switch.
Supplier: AREMCO

X-10 Powerhouse

An environmental control system consisting of a transmitter and a transceiver/appliance module. Up to 8 electrical appliances can be controlled, each requires a separate appliance module (available separately). The transmitter sends a signal through the domestic wiring to the appliance modules, the actual appliances being plugged into these.

Price:	US $49.95
Options:	Appliance modules, lamp module, thermostat setback controller.
Supplier:	LS & S GROUP INC.

Control 1

An environmental control unit with eight control receptacles that may operate various electrical devices, and a telephone - storing up to 10 telephone numbers. All control receptacles may be latched or momentarily turned on. Control 1 may be controlled by a dual switch, a communication aid, or a microcomputer.It can also be used to contro data output to a computer. The user may control up to 256 devices with optional control modules.

Supplier: PRENTKE ROMICH COMPANY

Wireless Data Transmission System

Consists of a portable transmitter and a stationary receiver that transmits the ASCII output from a portable computer or communication aid to a stationary computer or environmental control system (ECS). The transmitter connects to the input device and transmits its output via radio waves to a stationary transmitter, which is connected to the computer or ECS. Transmitter receives power from input device and receiver gets power from the host stationary device.

Supplier: PRENTKE ROMICH COMPANY

E.C.U.

The Deron Environmental Control Unit allows up to four mains powered appliances to be switched on/off using any kind of Deron switch. Features: single switch operation via the sequencer; visual display of the status of each appliance.

Price: £495
Options: Range of switches
Supplier: DERON

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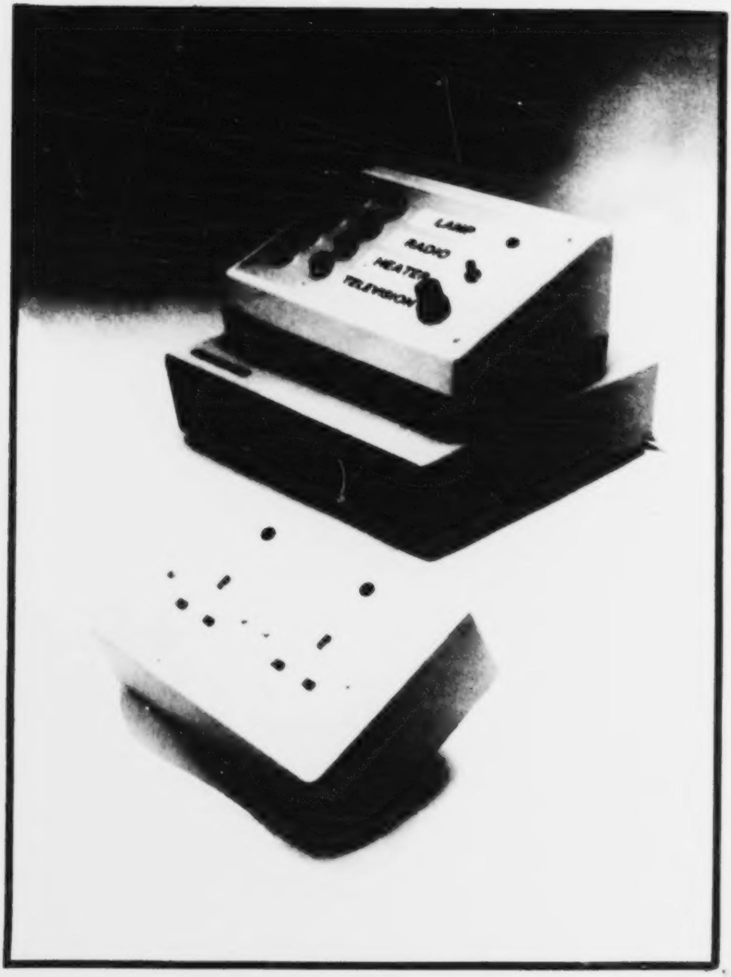
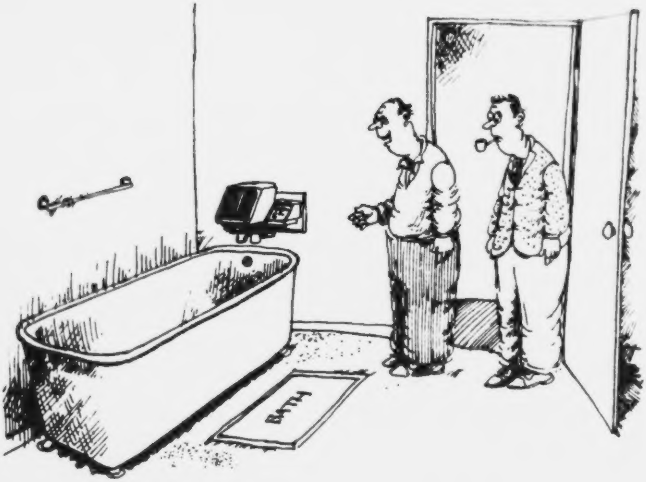




'There are hundreds of sensors built into the bath surface, so that when you lose the soap it can tell you where it is.'

SEC 1

The Steeper Environmental Control System has been designed for supply under the DHSS scheme for the provision of Environmental Controls for severely disabled persons. A single switch enables the user to answer and unlock the main door, operate the telephone, talk by intercom to a helper, sound an emergency alarm and switch up to five appliances on or off.
Should two rooms be in use, then the equipment may be operated from either room by means of a extension kit. The system may be adapted to enable control of a page turner, curtain controller, TV channel changer, computer, etc.
A rechargeable battery gives 4 hours operation in case the electrical supply fails. An automatic battery charger maintains and recharges the battery after a power failure. The display lights dim as the room illumination goes down for night time comfort.

Supplier: HUGH STEEPER LTD. 245

Steeper Channel Changer

The Steeper Channel Changer is a plug in control module designed for operation with the Steeper Environmental Control (SEC), it enables the user, once television has been selected, to choose from up to seven channels in addition to a mute facility. If so desired the last three of these channels can be dedicated to VTR control (select, play and stop).
The unit operates through the single input control of SEC. The standard hand held television control unit can be used independently.
Each Channel Changer has a memory device which is individually programmed with the signal codes for the users set. Memories are available for many standard sets although in some cases it may be necessary to specially program a device. The Channel Changer is only suitable for infra red controlled television.

Price: On application
Supplier: HUGH STEEPER LTD.

Whistle Switch

A single appliance remote control for switching on and off. The plug in unit plugs into any 110 outlet, the appliances plug into this and it is left in the on position. To switch the appliance on/off from up to 15m away, the user squeezes the hand unit.

Price: US $14.95
Supplier: LS & S GROUP INC.

Clapper

The Clapper is a sound activated on/off switch for electrical appliances. Two sharp claps turn an appliance on or off. Designed for use with devices requiring 15 - 300 watts.

Price: US $19.95
Supplier: LS & S GROUP INC.

Multi-Scan

A combined scanning communicator and device controller. As a communication aid it comprises a 4 x 12 position scanning display, for use with overlays and controlled by one or two switches. It has 14 independent output lines allowing switch controlled equipment to be used without removing the switches from Multi-Scan. Also featured is an infra-red transmitter for control of other equipment (see options).

Price: From £150
Options: Infra-red mains sockets, switches, chair mounting.
Supplier: ELFIN SYSTEMS LTD.

Switch-a-Switch Sequencer

The Sequencer enables a number of Switch-a-Switch units (e.g. door latch release, curtain puller) to be controlled from a single point, using one of a range of infra-red transmitters. It has a sequence of lights which are scanned at a user-determined rate between 3-150 digits/second. On activating the transmitter, the display halts at the selection made, performs that function, and resumes scanning. The Sequencer is available with either momentary output or a maintained mode. Three models are available: 5, 10 or 19 functions.

Supplier: RIDLEY ELECTRONICS LTD.

Door Opener

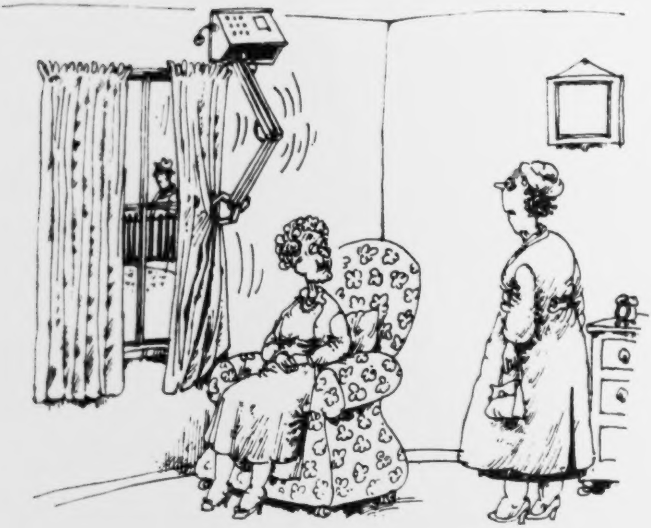
This enables an internal or external door to be opened from either side remotely using a Switch-a-Switch Transmitter (available separately). The door is opened by compressed air, and the power pack, which is mains powered, may be sited up to 20m from the door.

Price: £396
Option: Battery back up facility
Supplier: RIDLEY ELECTRONICS LTD.

Curtain Puller

The Switch-a-Switch Curtain Puller allows curtains to be opened/closed from anywhere in the room by using an infra-red transmitter (available separately). The system consists of a control unit and a puller unit and will work with any cord pulled curtains having a pull force of up to 4.5 Kg.

Price: £148 + VAT
Supplier: RIDLEY ELECTRONICS LTD.



'The computer detects any movement outside and automatically moves the curtain.'

RIPUL

RIPUL is an environmental control system which allows up to 16 mains devices to be switched on/off remotely from a keypad, and a hands free intercom system (purchasable separately). The infrared signal from the keypad is received by the plug in sender, which transmits a signal through the mains circuit to the plug in switching unit. One switching unit is required for each appliance and the units can be grouped together on the same channel if required.

Price: On application
Option: Exterior plug in sender.
Supplier: QED, EASIAIDS LTD.

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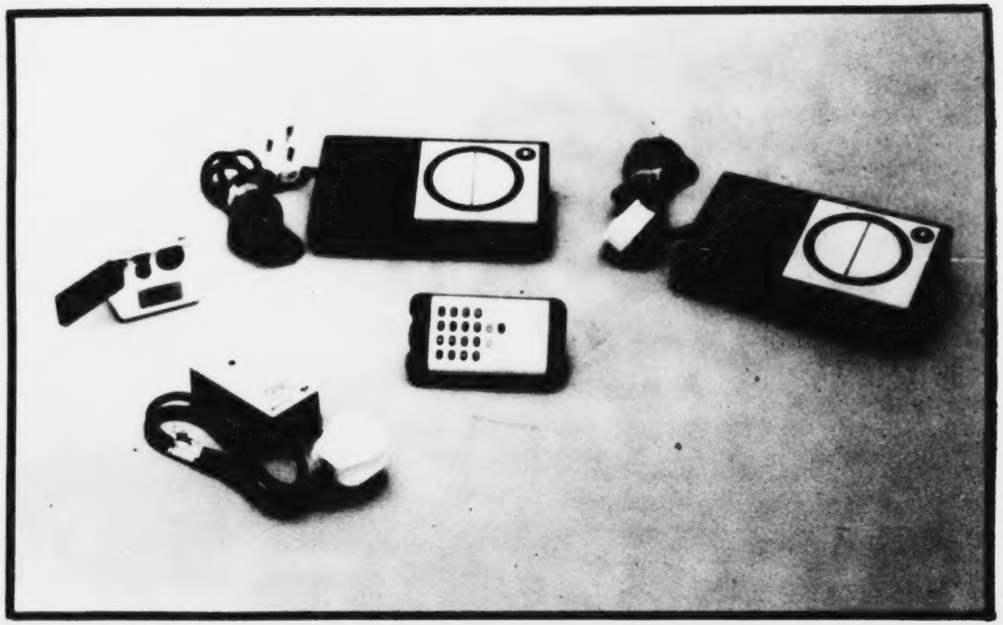
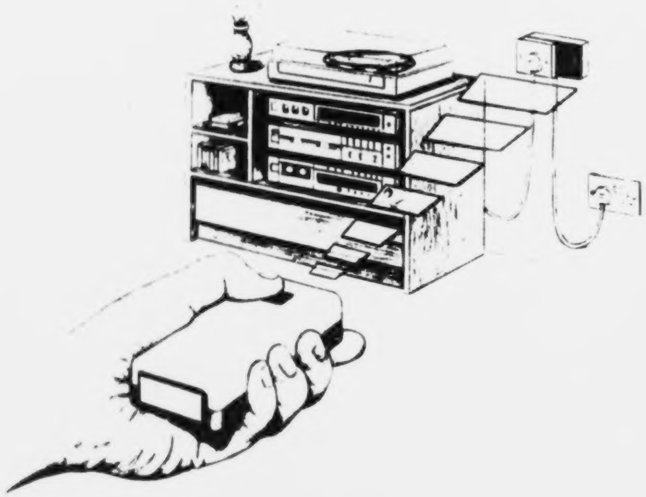


Remote 13 Amp Switch

This provides a means of switching an electrical appliance up to 10m away. The power unit plugs into any standard 13A socket, and the appliances plugs into the unit, which has a 1m cable for suitable positioning. The appliances can then be controlled by using any of the Switch-a-Switch transmitters - available separately.

Price: £59
Supplier: RIDLEY ELECTRONICS LTD.



Remote Dimmer Switch

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This enables a light to be controlled remotely - switched on/off or brighten/dim. The dimmer unit is a direct replacement for a single wall mounted light switches and is activated by a light touch. The light can be controlled remotely with on of the switch-a-switch transmitters - available separately.

Price: £38
Supplier: RIDLEY ELECTRONIC LTD.

Sound Activated Lamp Switch

This device turns a lamp on when a sound is made. Mains powered the lamp plugs into the device. LED setting guide for sensitivity; adjustable sound sensitivity setting; timing circuit varies the "on" time. Designed for incandescent bulbs, 150 watts maximum, 115 volts, 60 Hz.

Price: US $17.95
Supplier: LS & S GROUP INC.

Infra-Red Automatic Light

Designed for external use, this unit provides illumination for a person to safely make their way to and from a building (it also functions as a security measure). The infra-red detector senses a person moving up to 15m away and switches on a light for a predetermined time.

Price: £97
Supplier: RIDLEY ELECTRONICS LTD.

Com-Call

A three channel, voice activated wireless intercom which allows hands free continuous two way conversation. Installation: plug into any AC outlet. Features: 3 position channel selector; on/off/volume control; automatic squelch control; PLC demodulation for noise reduction. Two or three units are required.

Price: US $44.95 per unit
Supplier: LS & S GROUP INC.

Sound Activated Light Switch

This screws into any light socket and automatically turns the light on at any sound. LED setting guide for sensitivity; timing circuits vary the "on" time; photo control reduces daytime operation. Designed for incandescent bulbs, 150 watts maximum, 115 volts, 60 Hz.

Price: US $59.95
Supplier: LS & S GROUP INC.

Door Latch Release

The Switch-a-Switch Door Latch Release System enables a householder to unlatch the front door remotely from any position in a room (requires an infra-red transmitter - available separately. The system comprises a door latch release unit, and electric door keep, an in-room speaker announciator and a door speaker unit.

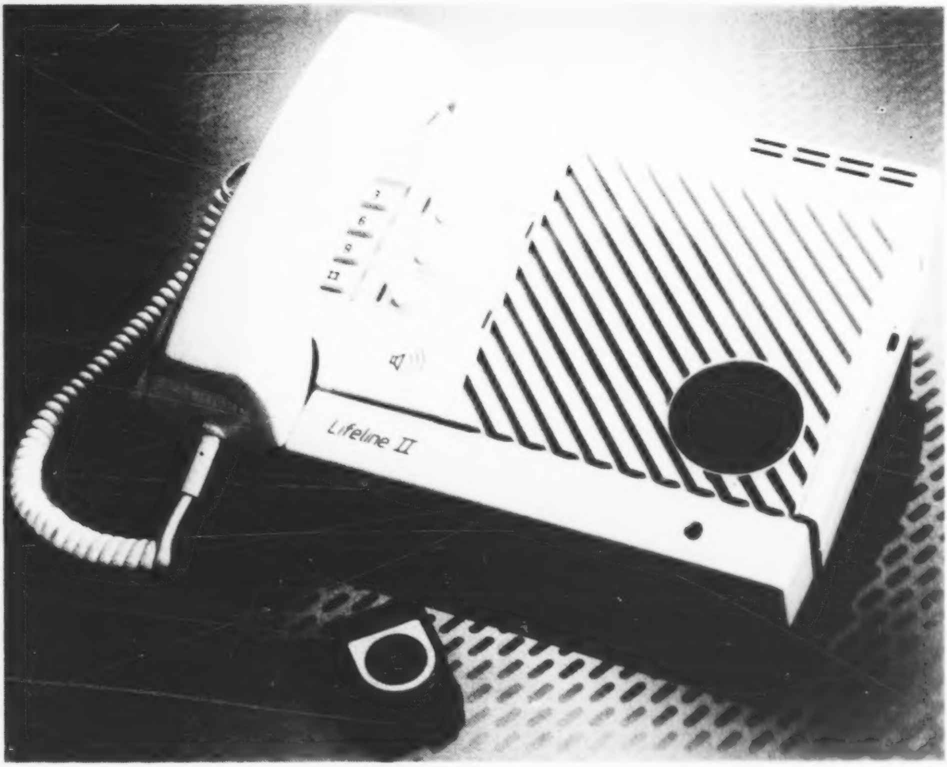
Price: £194
Supplier: RIDLEY ELECTRONICS LTD.

Intercom

A portable, wireless intercom which plugs into any mains socket. It has large touch sensitive keys and can be set for voice activation - it does not have to be touched at all. Two stations are supplied, can be expanded up to six.

Price: £54.45 + VAT
Options: Additional stations
Supplier: DERON

ALARM SYSTEMS



Piper Lifeline II

Lifeline II combines emergency alarm, remote speech and telephone in one unit. Additional functions include enhanced speech and hearing quality, whilst the hand free remote speech facility - useful for those who cannot move to the telephone quickly or who are confined to a bed or chair, incorporates a volume of control to aid those who are hard of hearing. Lifeline II comes with a 20 hour back up battery in the event of a power failure.

Options: Radio based smoke detector, security alarms, low temperature detectors, ceiling mounted pull cord.
Supplier: TUNSTALL TELECOM LTD.

Sensaphone

The Sensaphone 1000 calls to tell you if there is a fire (sensors reacting to a smoke or fire alarm), power failure, heat/air conditioning failure when you are away from home. It will call four pre-programmed numbers in sequence until its message is received. In this message Sensaphone identifies itself, gives the time and states the problem, it then switches on a built in microphone so that environmental sounds can be heard. When the user is away from home Sensaphone can be called and the status of monitored conditions checked. Sensaphone also functions as an 8 number automatic dialler.

Price: US $209.95
Supplier: LS & S GROUP INC.

Distress Alarm System

This enables the user to raise an alarm up to 1Km away. The alarm is raised by aiming a small hand held transmitter at the alarm point (must be in line of sight). The alarm point, or Bi-directional Unit, transmits a signal along an optical fibre to the warden /helpers station. Two states of alarm can be raised : Urgent Help and Assist. The warden can determine which alarm has been raised - the Urgent Help alarm can not be cancelled at the warden's station, the Assist can. The system allows for up to 8 rooms to raise the alarm at one power unit at the wardens station.

Options: A range of transmitters and alarm types.
Supplier: RIDLEY ELECTRONICS LTD.

133 Unidial II

Connected to the domestic mains and the British Telecom network, Unidial II is a means of summoning help should an emergency arise in the home. By using the call button or the neck worn pendant the unit will automatically dial a pre-programmed number. If this number is unobtainable the unit will call a second, repeating the sequence until help is obtained. Unidial has a built in microphone and loudspeaker providing hands free conversation, the sensitivity of the microphone means communication is possible even through a closed door. When connected to a Davis Central Control Station the unit also transmits ID data - accessing the caller's medical profile and establishing 2 way speech.

Supplier: DAVIS SECURITY COMMUNICATIONS LTD.

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Answercall

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Care-Phone

The Care-Phone functions like a normal telephone but has the advantage of being activated by a pendant alarm button to notify two other people that the user is in distress.

Price: £200
Supplier: EASIAIDS LTD.

Piper Haven

◀ Piper Haven

Piper Haven is a multi-featured grouped alarm system with two way speech. In the event of an emergency, the resident can contact the on site warden in three ways, by pressing a prominent red button on the wall mounted speech module; by pulling one of the ceiling mounted pull cords installed around the home; or by activating the Piper Petite radio trigger which is worn clipped to clothing. The warden carries a portable master unit which plugs into all speech modules located throughout the housing scheme, allowing him/her to respond to calls from any location.

Options: Smoke detectors, inactivity monitors, intruder alarms.
Supplier: TUNSTALL TELECOM LTD.

SLAUGHTERHOUSE
MANAGER

'Phone the police, the computerised meat axe has gone beserk.'

MISCELLANEOUS

The Activity Board

The Activity Board consists of a 12 305 x 610mm board 25mm thick with 21 76mm squares. The keyboard is waterproof and the clear plastic top peels back to allow any picture, shape, symbol, letter, number or word to be placed on any or all of the squares. Each square is a switch and the connections are brought out to a programming box which enables the teacher or therapist to select squares. When the user presses the correct square, a battery operated toy is activated as a reward. The keyboard can also be programmed to be one 305 x 610mm switch, two 229mm square switches. Toy included.

Price: US $375
Supplier: EKEG ELECTRONICS CO. LTD.

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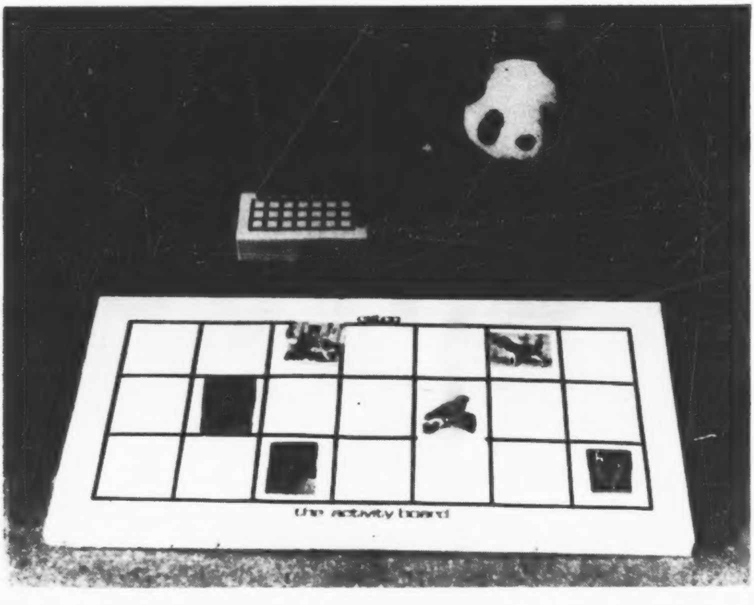
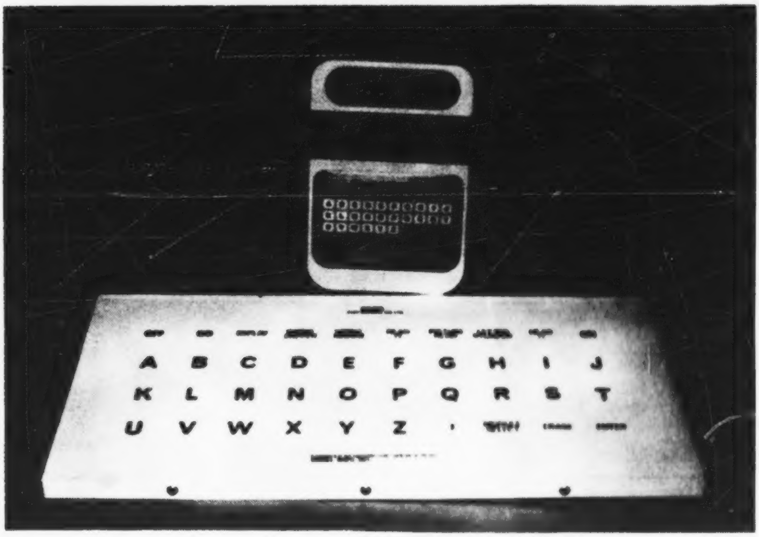


Muppet Learning Keys

Muppet Learning Keys

The Muppet Learning Keys is a bright blue, plastic keyboard that plugs into the joystick port of the computer. The letters are arranged alphabetically, and Muppet characters illustrate important keys, such as "GO", "STOP", and "OOPS". A paint box and a rule help students learn their colours and numbers. The keyboard comes with the program Muppets on Stage, which introduces children to letters and numbers. Works with the Apple II series of computers, Commodore 64 and IBM PCs.

Price: US $99
Supplier: SUNBURST COMMUNICATIONS



Expanded Keyboards for Texas Instruments Learning Aids

The keys require only light touch to activate and produce an audible and tactile click. Size 305 x 610mm, the keys are 51mm apart. Comes complete with the electronic learning aid - Speak and Spell, Speak and Read or Speak and Math plus a stand and instructions.

Price: US $375
Supplier: EKEG ELECTRONICS CO. LTD.

Kid-Comp

A talking computer designed for 4 - 8 years olds. It talks the child through each learning game with prompts, questions and scores, and gives musical feedback for correct and incorrect answers. A range of learning games are provided, these cover matching pictures/words, time, spelling, maths, music memory, numbers, colours/shapes, geography, etc.

Price: US $69.95
Supplier: LS & S GROUP INC.

Lesson One

An electronic learning aid featuring a large LED display, ABC keyboard with keyguard and musical effects. Activities include: Memory Tune; Begin With (pre spelling); Guess That Letter; Guess That Word; Math Quiz and Am I Correct. Operates on 6 C batteries or AC adaptor (not included).

Price:	US $44.95
Supplier:	LS & S GROUP INC.

Smart Start

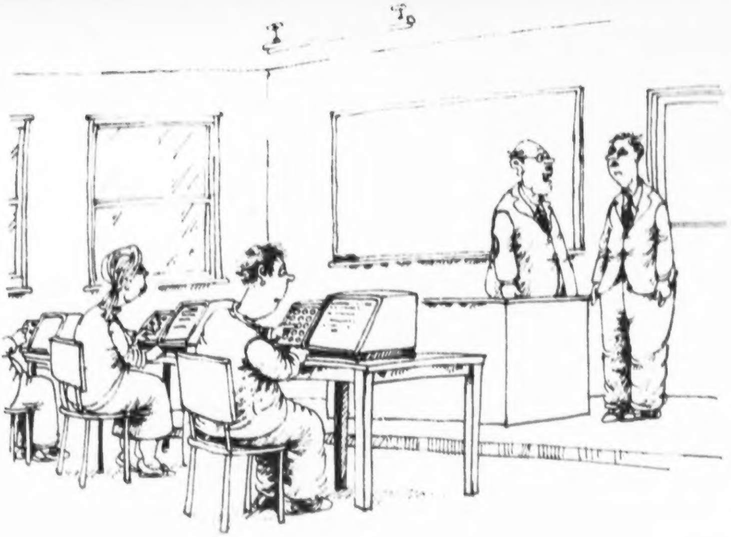
A computer style electronic learning aid designed for children of five and over. It has a large LED readout and 17 built in activities including math and music. A matchbook of illustrated multiple choice questions is provided, these are to be answered with the help of Smart Start.

Price:	US $24.95
Options:	Additional matchbooks.
Supplier:	LS & S GROUP INC.

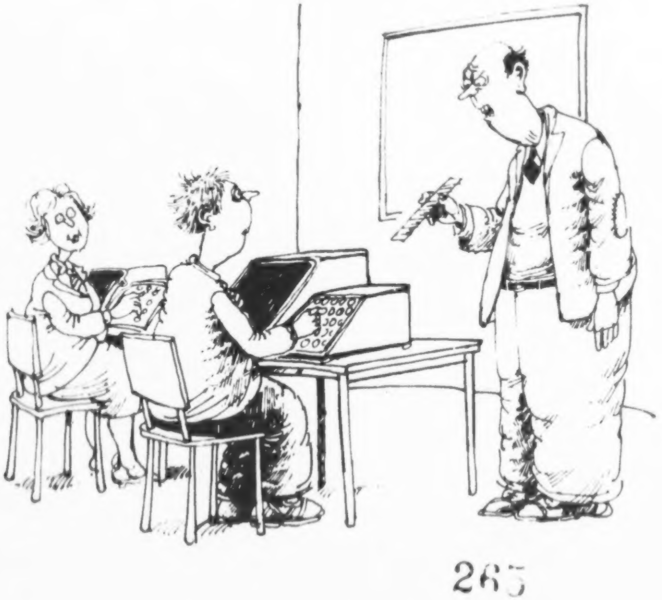
Learning Window

The Learning Window Teaching Machine features 13 learning activities to help skill development in areas such as maths, spelling, problem solving, music, art and computing skills. Each activity has five skill levels and features simple animation sequences on a dot matrix screen accompanied by sound effects. The student interacts with the programs using the ABC keyboard.

Price:	US $69.95
Options:	Voice cartridge, additional learning exercises.
Supplier:	LS & S GROUP INC.



'They may not be able to read and write but they certainly know how to push buttons by the time they leave here.'



'You will process a hundred times, Jenkins, "I must not play battleships on my computer during maths lessons".'

Dial A Teacher

An educational tool that features an electronic voice which instructs the student in an assortment of exercises. Teaches shapes, colours, counting, spelling and music. Features a small ABC keyboard and numeric keypad.

Price: US $49.95
Options: Additional software.
Supplier: LS & S GROUP INC.

Talking Whiz-kid

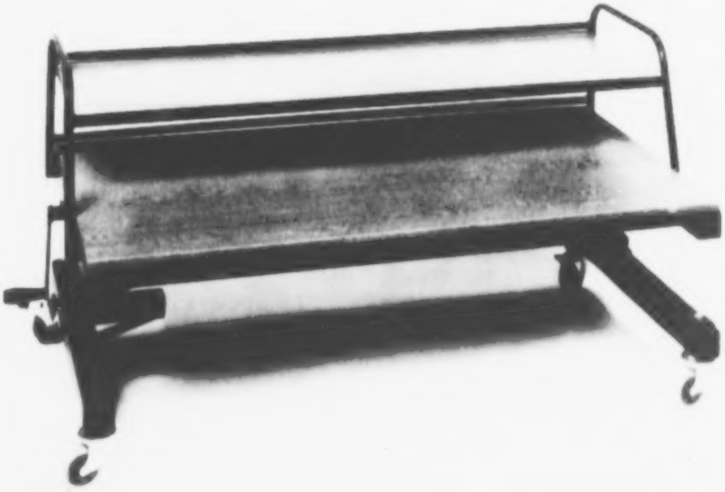
This is an electronic learning aid designed for children of five and over. Designed after a lap top computer it has an ABC keyboard, an animated LCD display screen which folds down for storage and a carry handle. The 50 program cards feature science, maths, spelling, colours, music, geography, astronomy, etc.

Price: US $84.95
Options: Vocabulary builder cards.
Supplier: LS & S GROUP INC.

Talk Board

Designed for pre-school children, the Talk Board is a simple electronic tutor with voice synthesiser. Teaching tasks include telling the time, music, colours, counting, animal sounds.

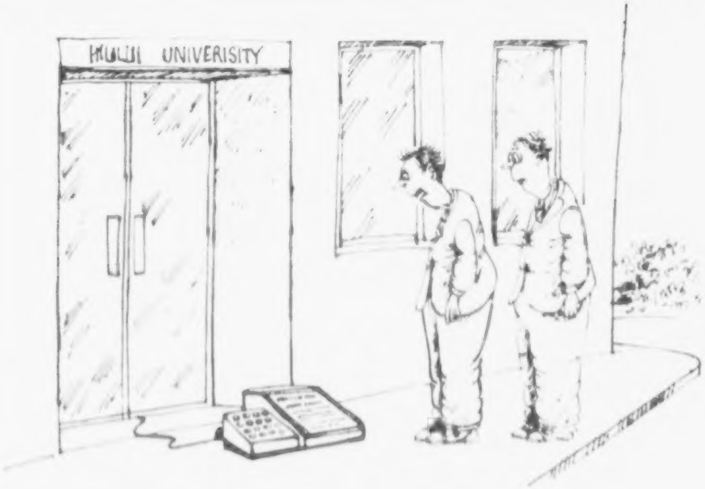
Price: US $44.95
Supplier: LS & S GROUP INC.



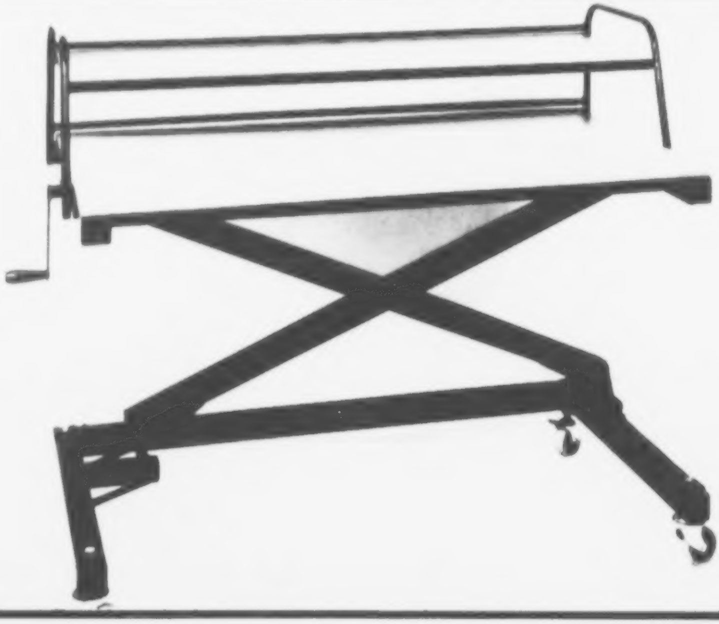
Adjustable Computer Trolley ►

Constructed on a scissor principal, the lower surface height can be adjusted - using a removable handle - from 49cm to 71cm. The trolley has no crossbar, allowing a person in a wheelchair to sit right up to it.
Dimension: Width 120cm, upper surface 30cm deep and the lower surface 65cm deep. It is mounted on large 7cm diameter wheels and is fitted with two brakes.

Price: £290 + VAT + carriage
Supplier: ATKINSON ENGINEERING


HULL UNIVERISITY

'It says it's the Student Union picket line and the strike committee are over at the Duke's Head.'



DST Swivelarm 2

Manufactured in Denmark, the Swivelarm has a built-in gas spring. This makes it extremely easy to adjust the position of a monitor and keyboard in all three dimensions at the touch of a finger.

Price: On application
Supplier UNICO COMPONENTS LTD.

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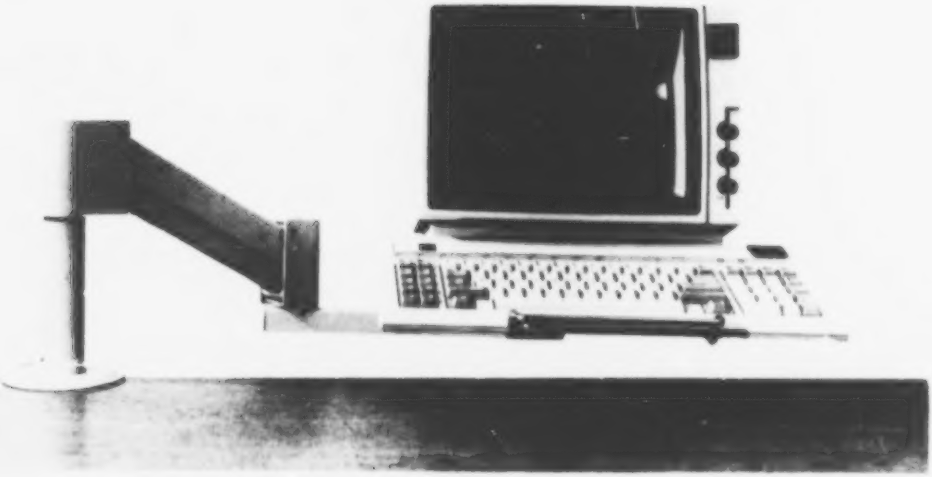

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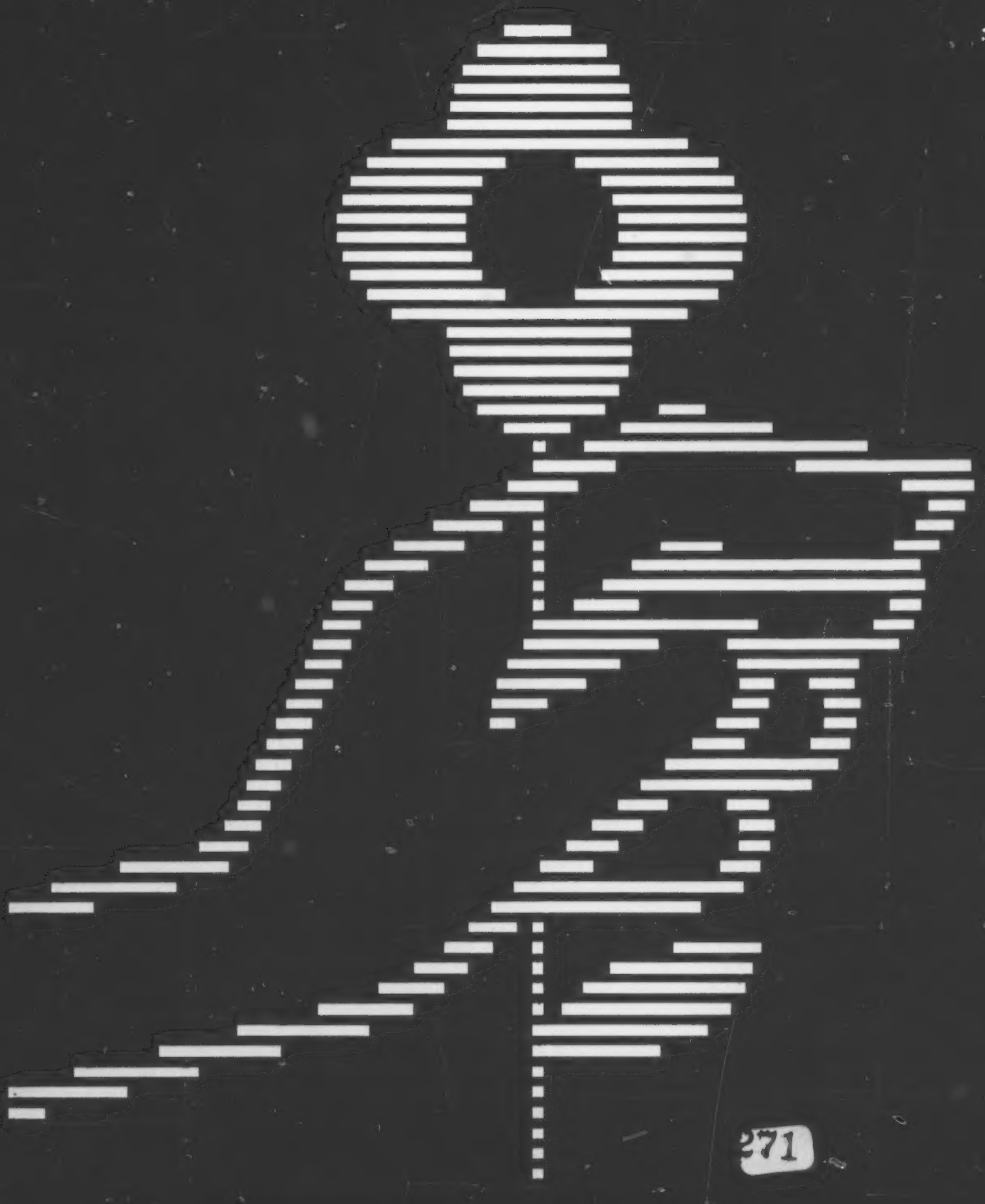
Electronic Organ

Each key is a 9cm square operated by skin contact. Mains or battery powered. Supplied with battery, charger and 9 tunes.

Price: £210
Supplier: TOYS FOR THE HANDICAPPED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FOOT SWITCHES

NAME	DETAILS	PRICE	SUPPLIER
Latching Foot Switch	Centrally pivotted, activated by firm pressure on the overhanging tongue. This is a latching switch.	£11.95	QED
Latching Foot Switch	This switch latches when pressed, unlatches at a second press. For use with toys, Deron radio etc.	£12.50	Deron
Foot Switch	Requires 400g force to activate. It will work with BBC computers (interface required). This is a latching switch.	£9.40	Cleveland ITEC
Foot Switch	A large wooden switch, specify termination with order.	£17.60	Toys for the Handicapped
Gated Foot Switch	A large, robust foot skate switch, hinged near the heel and fitted with straps. The angle of the foot plate is adjustable and the switch is supplied with 2, 4 and 8-way gates.	£157	Teleswitch
Foot Pad Switch	This is terminated with a DIN plug and works with A-2-B toys, or a BBC computer (A-2-B interface box required). Requires only light pressure	£10.71	A-2-B
Air Operated Foot Switch	A sensitive foot switch, requiring only light pressure. Momentary action.	£29.50	Deron
Robust Foot Switch	This a commercial foot switch fitted with a 'D' connector for use with BBC computers. Momentary action Latching action	 £13 £14.50	Speech & Language Group

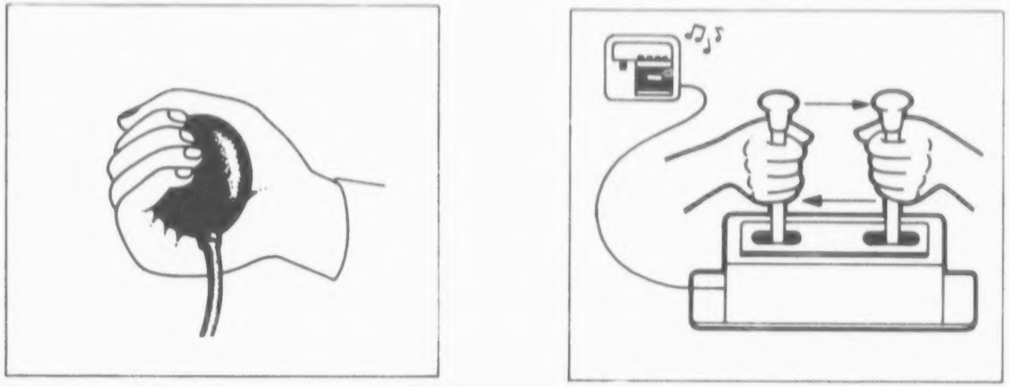
NAME	DETAILS	PRICE	SUPPLIER
Skate Footswitch	An adjustable metal footrest assembly fitted with straps. Supplied with interchangeable perspex gates for 2,2/4 and 2/4/8-way operation. For use only with Telemachus equipment.	£158	Telemachus
Heavy Duty Microswitch	A dual switch incorporated in a metal, adjustable angle, foot switch arrangement with heel rest. Variable switch positioning.	£58	Telemachus
	Single switch	£50	
Foot Switch	Wooden construction; for use with toys etc., and computers. (interface required)	£22.40	Toys for the Handicapped
Heavy Duty Foot Switches	Robust dual switches mounted on an angled board. Designed for people with gross foot movement. Single switch version also available.	P.O.A.	Possum Controls
Footskate	Requires fine foot control. It can be up and down movement or used to select up to 8 microswitches.	P.O.A.	Possum Controls

GRIP SWITCHES

Grip switches are hand-held and operated by either clenching or thumb pressure.

NAME	DETAILS	PRICE	SUPPLIER
Thumb Switch	A press button mounted on the top of the hand-held unit. Requires strong thumb - 400g force to activate.	£4.31	Magpie Systems
Squeeze Ball Switch	A pneumatic switch which is operated by squeezing the hand-held ball. Works with A-2-B toys and a computer via the A-2-B interface.	£16.63	A-2-B
Grip Switch	Two micro switches in a wedge-shaped unit. A tongue protudes along the switch, by gripping the wedge and squeezing the tongue inwards the switches are activated. Requires 600g force to activate. Tactile and audible feedback.	£35	Queenswood Scientific
Button	A dual switch consisting of two press buttons mounted on a cylinder, one at the end, the other along the length. Operating force 100g each. Tactile and auditory feedback.		Aremco
Grip Switch	A slight grasping pressure on the rubber handle activates this pneumatic switch. Interchangeable handles in different sizes are available. Adjustable sensitivity.	(US) $45.95	Steven Kanor Inc.
Pinch Switch	This oval switch responds to light pinching or squeezing action. It will fit into a childs palm. Fitted with a 3.5 or 7mm jack plug.	$20.95	Steven Kanor Inc.
Hand-Held Switch	This has a momentary action push button switch housed at one end. It is fitted with a 7-way DIN plug and a 2.5mm jack plug, enabling a device to be controlled directly, or via a BBC computer.	£15	Speech & Language Group

NAME	DETAILS	PRICE	SUPPLIER
Grip Touch	A vertically mounted cylinder-shaped touch sensitive single switch. Operates by surface contact - adjustable sensitivity. Audio feedback when activated. For use with Telemachus devices or a BBC B (interface required).	£65	Telemachus Ltd.
Grasp	A cyclindrical switch activated by a grasp pressure of 170g. It is fitted with a 3mm mini-phone plug.		Handicapped Child's Technol. Services
Grip Switch	Gripping action on the hand-held rubber ball operates the air switch. Fitted with a 0.25" jack plug.	£31.50	Deron
Two-Handed	Wooden construction with two vertical handles - one for each hand. The handles must be pulled toward each other to activate the switch. Fitted with a 0.25" jack plug.	£30	Deron



DERON GRIP SWITCHES

HEAD SWITCHES

This section includes switches activated by chin, eye, mouth and sound, as well as by actual head movement.

NAME	DETAILS	PRICE	SUPPLIER
Chin Switch	Manufactured by TASH, this has two button switches mounted along the length of a cylinder. Terminated with a 3.5mm jack plug. Button diameter: 25mm each. Operating force: 230g.	£60	Aremco
Chin Switch	A lever-operated two-way switch system. Consists of a switch box with two plastic coated wires which bend to suit particular use. Aubible feedback.		Queenswood Scientific
Chin Sensor	A lightweight harness supports two infra-red senors which will respond to the wearers chin. It can be supplied as a system which responds to left or right head movement.	P.O.A.	Queenswood Scientific
Neck Halter	One or two light action microswitches mounted for chin operation. Switch positions are adjustable.	P.O.A.	Possum Controls
Chin Operated Switch	Two switches fixed to a neck-worn halter. Switch positions are adjustable. Audible feedback. Requires 50g force to activate.	£46	Taucan Ltd.
Chin Switch	One or two light duty micro switches with adjustable angle breast plate. Switch positions variable. Single switch Dual Switch	 £40 49.50	Telemachus Ltd.
Eye Reflection Switch	An infra-red eyeball switch. Consists of a mounting piece for attachment to a spectacle frame and a control unit. Allows control of a computer by left-right eye movement or closure (blinking ignored). Sensitivity and hold time are adjustable. An on-screen keyboard emulator is available.		Queenswood Scientific

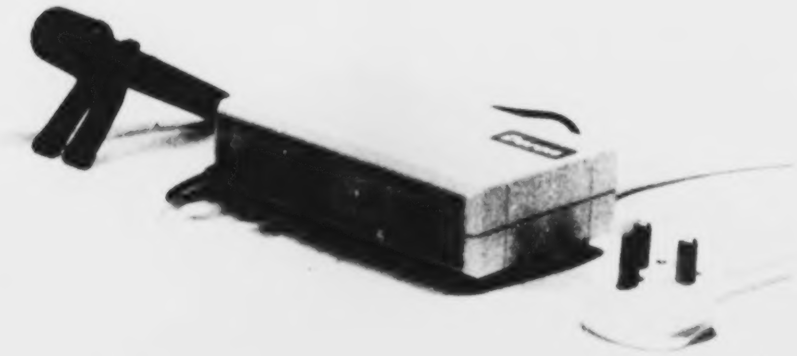
NAME	DETAILS	PRICE	SUPPLIER
Infra-Red Switch	This single switch can be activated by most body motions, including blinking and eye movement. It can be used with a number of computers and communication systems.	(US) $375	Words+ Inc.
Twinkle Switch	This reponds to rapid eye movement. Consists of adhesive senors for attachment to the temple, a junction box and control unit. Models are available for use with BBC or Apple computers.	£595	Icom Designs
Eyebrow Switch	Mounted on a visor, a lever projects down from the switch in front of the forehead, resting against it. Raising an eyebrow or wrinkling the forehead activates the switch and produces an aubible click.		Words+ Inc
Head Switch	The padded head switch is mounted on a 6cm diameter rod with a knob at the end for mounting. Activation pressure is adjustable.	(US) $65.95	Steven Kanor Inc.
Bifurcated Flexitube	Two light action microswitches mounted on a bifurcated flexitube, which is attached to a microphone stand. Operated by side-to-side head movement. A single switch version is also available.	P.O.A.	Possum Controls
Head Control for Wheelchairs	The switching unit uses four tilt swithes to trigger switch closures based upon six possible head positions. The control unit is headband mounted and plugs into the wheelchair control box. Each of the six positions makes a different momentary switch closure.		Hugh Macmillan Medical Centre
Headband Switch	This has a small paddle for a lever. The paddle rests on the forehead; raising the forehead muscles activates the switch. The paddle must be taped to the forehead. An adjustable headband is included.		Hugh Macmillan Medical Centre

NAME	DETAILS	PRICE	SUPPLIER
Battery Operated Soundswitch	A sound operated on/off switch. The sensitivity, ie the loudness needed, is adjustable, as is the "on" period: 1-30 secs. Incorporates switchable "grunt" facility, which requires a minimum sound duration of 1 second.	£43	Deron
Mains Operated Soundswitch	Similar to the above, but fitted with a plug-in mains adaptor.	£49.50	Deron
Sound Operated Switch	Another Deron soundswitch, but only for use with the Deron environmental control unit.	£56.10	Deron
Sound Operated Switch	Battery operated, activated by tongue clicks etc. "On" time and sensitivity are adjustable. Battery and microphone are included.	£59.95	QED
Sound Switch	Speak into the microphone to switch on. The strength of voice needed and the running time are adjustable.	£59.50	Toys for the Handicapped
Micro-Mike	Based on a modified C.B. microphone. This connects to the analogue port of the BBC computers.		Magpie Systems
	Hand-held version	£35	
	Desk-top version	£41	
Voice Activated Switch	This switch reponds to vocalisations by means of a built-in microphone and amplifiers. Adjustable sensitivity. Fitted with a 3.5 or 7mm jack plug.	(US) $75.95	Steven Kanor Inc.
Vox Box	Activated be vocalisation, hand-clap etc. Indicator light gives visual feedback. Delay time and sensitivity are adjustable. Can be used independently or as an input via a suitable interface.	£66	Telemachus
Sound Sensor	Reponds to sounds maintained for a prescribed but adjustable time. Can be used with toys, rewards etc.	P.O.A.	Queenswood Scientific

NAME	DETAILS	PRICE	SUPPLIER
Huff Sensor	A non-contact pad which reponds to expellation at a distance of 152-254mm from the mouth.	P.O.A.	Queenswood Scientific
Lipseal Sensor	A small sensor which mounts on the lower lip and responds to the presence of the upper lip.	P.O.A.	Queenswood Scientific
Pneumatics	A mouth controlled (suck/puff) air switch on a free-standing flexitube. Bed and wheelchair mountings are also available.	P.O.A.	Possum Controls
Air Switch	A single switch activated by a change of air pressure in the tube. It can be controllled by either a sip or a puff.		Medical Equipment Distributors
Suck/Blow Switch	Mouth operated. A plastic tube (spares are supplied) fits into a 533mm gooseneck which connects to the switch box. It has a wooden base, is fitted with a saliva trap and comes with a G-clamp. Adjustable sensitivity.	£95	QED
Blow or Suck/Blow Switch	Supplied with the switch are a blow tube, 2 mouth pieces, an air pad and a fitting plate. The high pressure model is blow only.	£19.55	Magpie Systems
Blowpipe	Blowing lightly down the pipe activates the switch. A range of stands area available separately.	£37.40	Deron
Puff/Suck Switch	A pipe mouthpiece is fitted to a tube and an air switch. Supported by a gooseneck. Clip supplied for mounting. 1-way switch 2-way switch	£50 £63	S.B. Systems
DIY Air Operated Switch	Used in washing machines. Contains three switches that are operated in turn as puff pressure increases. Plastic tube and a mouthpiece are required.	£7	QED

NAME	DETAILS	PRICE	SUPPLIER
Pneumatic	A dual switch operated by puffing and sipping on a disposable straw. Has an internal saliva trap. Available with an extended tube for swivel clamp mounting.		Aremco
Sip & Puff Switch	Single switch, activated by sipping on one tube or puffing through the other. Fitted with a 3.5 or 7mm jack plug.	(US) $36.95	Steven Kanor Inc.
Sip & Puff Switch	A dual switch, sipping on the straw will activate one switch, puffing activates the other. Mounted on a 305mm gooseneck. Clamp included.	$48.95	Steven Kanor Inc.
Double Sip or Puff	One sip activates one switch, a harder sip activates the second whilst maintaining the first. Available either as a sip only or a puff only unit. A 305mm gooseneck and clamp are included.	(US) $48.95	Steven Kanor Inc.
Suck or Blow Switch	This has 4 outputs and 2 activating tubes, one for suck and one for blow. A momentary action switch for connection to a BBC or a battery device. Fitted with a 'D' connector and a 2.5mm jack plug.	£34	Speech & Language Group
Pressure/Suction Sensor	A pneumatic dual switch connected to flexi-tube assembly with a removable mouthpiece. A clip is included for mounting.	£68.25	Telemachus Ltd.
	Single switch (pressure only)	£51.50	
Pipe Mouth-Piece Transmitter	A remote control activated by lip contact on the mouth-piece. This is a Switch-a-Switch environmental control.	£19.55	Ridley Electronic
Tongue Switch	Made by Prentke Romich, sideways movement of a plastic lever activates one or other of the 2 switches. Audible feedback. 25g force required to activate. Mounting harness available.	£65	Liberator

NAME	DETAILS	PRICE	SUPPLIER
Tongue Operated Switch	Tongue or lip contact operates the switch. For use with environmental control unit.	£35.40	Deron
Tongue Switch	A dual switch activated by slight lateral tongue movement against a protruding spring lever. Mounted on a gooseneck stand. A single switch version is available.	(US) $51.95	Steven Kanor Inc.
Tongue-in-Cheek	Sensitive microswitches are attached to adjustable side-pieces on a spectacle framework. Slight tonge movement within the cheek activates the switch.		Telemachus Ltd.
	Single switch	£38	
	2-way switch	£48	
Tongue Switch	This touch/tongue switch is activated by the slightest pressure. Supplied with two clips for mounting.	P.O.A.	Possum Controls



DERON MAINS OPERATED SOUND SWITCH

LEVER SWITCHES

These mechanical switches can be activated by any of a range of physical abilities such as movement of the hand, arm, leg, head etc., depending on how they are mounted and positioned.

NAME	DETAILS	PRICE	SUPPLIER
Light Touch Lever Switch	A dual switch with a protruding lever. Pushing the lever to one side activates one switch, pushing to the other side activates the second switch.		Medical Equipment Distributors Inc.
Developmental Lever Control	This has two levers mounted on a speaker which can plug into a tape recorder aux. port. Designed to be mounted on a flat surface with a C-clamp (extra).		Handicapped Child's Technol. Sevices
Clamp-on Bump Switch	Activated by 60g pressure on its tip, this switch is designed to be attached to a bed, table etc. and controlled by any convenient part of the body. Both momentary and toggle models are available.		Luminaud Inc.
Sub-Miniature Lever Switch	A lightweight unit equipped with a cable and 0.25" jack plug. Activating force: 50g; tactile and audible feedback.	£10	QED
Lever Switch	Termination and feedback as above. Requires 65g force to activate. Available either as normally on or normally off.	£10.50	QED
Heavy Duty Lever Switch	A heavier, more robust unit than the above. Requires 100g force to activate. Tactile and audible feedback. Available either as normally on or normally off.	£12.50	QED
Platform Switch	Large surface area. Feedback and termination above. Requires 75g force.	£26	QED

NAME	DETAILS	PRICE	SUPPLIER
See-Saw Switch	A double switch, pivotted in the centre, activated by pressing either side. Activating force: 105g.		QED
	Termination: 15-way sub-min 'D'	£16.50	
	7 pin DIN	£15.75	
	Two 0.25" jack plugs	£15.75	
Leaf Switch (Long)	Made by Zygo, this is activated by deflection in either direction. Sensitive but robust. Requires 30g force to deflect. 3.5mm jack plug.	£46	QED
Leaf Switch (Short)	Similar to the Leaf Switch (Long) - see above - but with reduced leaf length.	£46	QED
Leaf Switch	Made by TASH, this has a flat plastic leaf. Deflection in one direction only. Comes with padding for head use. Audible feedback. Requires 80g force to activate. Fitted with a 3.5mm jack plug.	£53.35	Aremco, Liberator
Leaf Switch	Horizontally mounted on a stand, adjustable height. For use with battery devices etc., computers (interface required) and mains equipment (adaptor required).	£20.20	Toys for the Handicapped
Flip Switch	A large paddle-shaped switch mounted similarly to the above.	£20.20	Toys for the Handicapped
Paddle Switches	Two light action microswitches, each with a paddle lever. Supplied either mounted on a board or unmounted for special positioning. Single switch version also available.	P.O.A.	Possum Controls
Paddle Switch	A single switch activated by pressing on a 75 x 200mm acrylic plastic plate. Custom sizes are available.		Words+ Inc.
Mounting Switch	Operating force adjustable: 28-85g. Feedback: audible click. Can be mounted in a variety of locations.		Developmental Equipment

NAME	DETAILS	PRICE	SUPPLIER
Armslot Switch Controller	Five paddle switches arranged so that only one can be activated at a time - by arm movement. Switch functions: left, right, forward, back and select; these may be installed in any slot to produce the best configuration. Feedback: audible click.		DU-IT Control Systems Group Inc
Leaf Switch	This flexible switch will activate a toy or other device when bent gently. Fitted with a 3.5 or 7mm jack plug.	(US) $25.95	Steven Kanor Inc.
Press to Make Switch	A basic single switch with a momentary action. Fitted with a 'D' connector for use with BBC computers.	£18	Speech and Language Group
Light Duty Microswitch	A single or dual switch available either unmounted for custom arrangement or board-mounted in a universal arrangement for vertical or horizontal operation.		Telemachus Ltd.
	Single: Unmounted	£21.50	
	Mounted	£30	
	Dual: Unmounted	£36.75	
	Mounted	£44	
Heavy Duty Microswitch	Two switches unmounted on fly leads with connector. For custom arranging.		Telemachus Ltd.
Paddle Switch	This paddle switch is mounted on a gooseneck and is supplied with a clip for securing. Range od terminations for different computers.	£19.30	S.B. Systems
Paddle Switch	Similar to the above, but mounted on a board. Requires 300g force to activate.	£25	S.B. Systems
Large Surface Paddle Switch	Also board-mounted, but with large surface area.	£27.50	S.B. Systems
Zygo Lever Switch	A padded, snap-action lever which is pushed to close the switch, the distance the switch travels is adjustable. Requires 230g force to activate. Tactile and audible feedback. Fitted with a 3.5mm jack socket.	£55	QED

NAME	DETAILS	PRICE	SUPPLIER
See-Saw Switch	A centrally pivotted single switch, one side switches on, the other side switches off. Terminated with a 0.25" stereo jack plug. Audible feedback.	£11	Ketteridge, P&K
Low Profile Switch	Made from thin aluminium, the lever has a large surface area and is only 6mm above its mounting. Requires 120g force to activate. Fitted with a 0.25" jack plug.	£8	Ketteridge, P&K
Butterfly Switch	Two switches, activated by pressing down or removing pressure. Terminated with two 0.25" jack plugs.	£28	Ketteridge, P&K
Macro-Key	A robust but sensitive switch designed for people with gross motor control. For BBC computers.	£4.75	Cleveland ITEC
Mini-Macro-Key	As above but smaller.	£4.16	Cleveland ITEC
Single Rocker Switch	Made by Prentke Romich, this has a metal plate mounted above the switch box on rubber pillars. Pressure - 25g force - on the plate activates the switch. Audible feedback.		Liberator
Double Rocker Switch	Similar to the above. 30g force on either end of the plate activates one of the two switches. Terminated with a 3.5mm jack socket.	£60	Liberator
Mini-Rocker Switch	This is a small see-saw switch requiring only 25g force to activate. Audible feedback.	£65	Liberator
Rocker Switch	A dual switch activated by pressing down on either end of the plate - each end controls one switch.		Medical Equipment Distributors Inc.
Left/Right Rocker Switch	Pressure on one end of the plate activates one switch, pressing the other end activates the second switch. A click is given on each switch press.		Developmental Equipment

NAME	DETAILS	PRICE	SUPPLIER
Rocker	A dual switch operated by pressing either side of the switch. Operating force: 130g. Tactile and auditory feedback. Rocker size: 89 x 89mm each.		Aremco
Flex	A single switch operated by bending the flexible rubber tip 13mm in any direction. Requires tubular mounting. The tip can be removed and rotated. Lever size: 51 x 64mm. Operating force: 180g. Tactile and auditory feedback.		Aremco
Treadle	A single switch operated by pressing the hinged top surface. Operating force: 700g thus allowing the hand, limb etc. to rest on the switch between activations. Tactile and auditory feedback.		Aremco
Lever	A dual switch operated by pushing the lever in one of two directions. It is spring loaded, returning the lever to the centre--off position. Requires 100g force to activate.		Aremco
Click Switch	A plastic, latching switch mounted on a wooden base. Size: 120 x 120mm. Rocking action, audible click. Fitted with a 0.25" jack plug (others on request).	£6.65	Brilliant Computing
Box Switch	A very robust switch for use by people with gross motor control. Mounted on an aluminium box. Connects to the analogue port of BBC computers.	£19.95	Syndicate Software
Wooden Switch	Mounted in a plywood box. The surface area is large enough for picture/symbol labelling. Requires 350g force to activate. Fitted with a 3.5mm jack.	£8.50	Bradford Activity Toys
Heavy Duty Switch	A robust switch built into a wooden box. Activated by pressing on the lid. Requires 125g force to activate. Fitted with a 0.25" jack plug.	£6	Computer Aids

NAME	DETAILS	PRICE	SUPPLIER
Rocking Plate Switch	This is a "see-saw" double plate switch. Light pressure on the blue or yellow side activates the device connected to that side. Switches can not be activated simultaneously. Fitted with two 3.5 or 7mm jack plugs. Size: 102 x 305mm.	(US) $35.95	Steven Kanor Inc.
Small Rocking Switch	A small version of the above. The plate is white. Size: 76 x 152mm.	$26.95	Steven Kanor Inc.
Pull Switch	A ring or a ball (both included) is attached by a cord to the switch, tugging gently will activate the switch. Fitted with a 3.5 or 7mm jack plug.	(US) $24.95	Steven Kanor Inc.
Overhead Pull Switch	This pull switch is mounted on a flexible gooseneck. A clamp for securing, ball and ring are included.	$35.95	Steven Kanor Inc.
Graphics Switchboard	Five keys housed together, each a subminiature lever switch. Interfaces with BBC computers. Slight tactile and auditory feedback.	£57.50	QED
Slot Selection Switch	Made by Zygo, this unit houses five switches and will interface to any computer. Requires 100g force to activate. Tactile feedback.	£160	QED, Aremco
Micromate Triple Switch	Three microswitches housed in a wooden box and with wooden tops. Robust, requires 250g force to activate. Designed to complement the Micromate touch screen.	£29.50	Toys for the Handicapped
Smack Down Lever Transmitter	A remote control for Switch-a-Switch environmental control equipment. Large contact area with adjustable sensitivity.	£9.50	Ridley Electronics Ltd.

LIGHT SENSITIVE SWITCHES

These switches are operated by placing an obstruction between a light source and a receptor.

NAME	DETAILS	PRICE	SUPPLIER
Broken Beam Switch	A beam of light from the lamp is incident upon the detector. The switch is activated by interrupting the beam - both fine and gross movements work. The source-receptor distance is adjustable: 152mm-4.57m; height and angle are also adjustable.	£79.50	Deron
Shadow Switch	The switch is activated by casting a shadow on the detector. For use with BBC computers. (interface required)	£32	Ketteridge, P&K
Photo Cell Switch	When a shadow is cast upon the photo cell the switch is activated. Fitted with a 3.5 or 7mm jack plug.	(US) $40.95	Steven Kanor Inc.
Magic Eye	A similar device to automatic shoop door openers. Break the ray to activate the switch. For use with toys etc., and computers. (interface required)	£49.70	Toys for the Handicapped

DERON BROKEN BEAM SWITCH

PRESSURE SWITCHES

These switches are similar to lever switches in so far as they are activated by weight or force, for example with hand, limb, foot, etc.

NAME	DETAILS	PRICE	SUPPLIER
Pad Switch	A flat flexibale mat made of PVC. Can be used to encourage crawling, weight bearing etc. Fitted with a 1/4" jack plug (others on request)		Brilliant Computing
	Size: 160 x 580 mm	£8.95	
	380 x 670 mm	£11.10	
Pressure Mat	Step or roll on to activate. Designed for use with toys, alarms etc.		Deron
	Size: 575 x 170 mm	£3.50	
	690 x 390 mm	£5.95	
Pressure Switch	Designed to be worn on the upper or lower arm, knee etc. Pressure against the switch activates it.		Luminaud Inc.
L.T. Switch	This switch requires a pressure of only 21g and gives a loud click when activated.		Developmental Equipment
Cup Switch	Made by TASH, this is "cupped" in a plastic base. Pressing the top surface activates it. The base provides a surface for mounting. Switch diameter: 50mm, height: 10mm. There is also a mini version, diameter: 30mm and height: 8mm	P.O.A.	Aremco
Medium Pressure Switch	A dual pressure switch with two large contact areas, housed in a metal case. A slide switch allows the distance between pads to be adjusted.	£47.50	Telemachus Ltd.
	Single switch	£42.50	
Small Touch Pad	Wooden construction, for use with battery devices etc., computers (interface required).	£14.90	Toys for the Handicapped
Large Touch Pad	Single switch similar to the above.	£24.80	Toys for the Handicapped

NAME	DETAILS	PRICE	SUPPLIER
Double Touch Pad	Dual switch similar to the above.	£28.60	Toys for the Handicapped
Block Switch	Wooden box construction; a momentary single switch with a light positive action. Fitted with a 1/4" jack plug (or others on request).	£11.10	Brilliant Computing
Single Plate Switch	Large contact area operated by light pressure.	P.O.A.	Possum Controls
Double Plate Switch	The contact area is activated by light pressure. The surface is divided in two, each side operating independently.	P.O.A.	Possum Controls
Jumbo Plate Switch	Similar to the above but large. A single switch version of the jumbo plate is also available.	P.O.A.	Possum Controls
Plate Switch	Activated by 85g of pressure, this switch gives a click as audible feedback.		Development Equipment
Plate Switch	This pressure switch has a 230mm square plastic plate. It comes with two 3.5mm jacks: one with normally closed contacts, the other with normally opened contacts.		Maddak Inc.
Membrane Plate Switch	A thin membrane switch requiring a force of 60g to operate. It comes with a 1.52m cable fitted with a mini-phone plug connector.		Crestwood Company
Versatile Vibrating Switch	This switch has a 19 x 11cm lid under which a picture may be placed. Vibrates when the lid is pressed. It has two 0.25" jack sockets, allowing it to be used as a switch to control a toy or other device, or as a reward box to be used with another switch.	£13	Lecta
Versatile Light Switch	Similar to the above, but this switch lights up when pressed.	£10	Lecta
Versatile Beeper Switch	Similar to the above, the feedback is a beep when pressed.	£11	Lecta

NAME	DETAILS	PRICE	SUPPLIER
Single Pad Switch	The pad is 30mm thick and has an area of 100 x 125mm. Requires 200g force to activate. Designed for A-2-B toys but will work with a BBC via the A-2-B interface.	£7.59	A-2-B
Four Pad Switch	A linear arrangement of 4 of the above pads.	£16.28	A-2-B
Two Pad Switch	The pads are the same board as the 4 pad system. Two models are available. One reqiures both pads to be pressed to produce a single function; the other gives a single function for each.	£12	A-2-B
Medium Pressure Switch	A dual switch consisting of two raised pads (each 65 x 100mm) mounted on a sloping surface. Requires 150g force to activate. Audible feedback.	£40	S.B. Systems
Medium Pressure Switch	A single switch similar to the above. Requires 200g force to activate.	£30	S.B. Systems
Medium Pressure Switch	Large surface area. Specify termination with order.	£42	Teleswitch
Single Hand-Held Switch	Fitted with a 1/4" jack plug; for use with Tech Toys equipment.	£10	Tech Toys
Single Pressure Switch	Activated by hand or foot pressure.	£25	Tech Toys
P Switch	Made by Prentke Romich; a pad (2 sizes provided) is strapped to part of the body and is activated by muscle flexion. The sensitivity is adjustable. The pad is connected to a control box which provides both audible and visual feedback.	£111	Liberator
Beam Switch	This is a remote control-type device. By pointing the transmitter at the receiver and pressing the button, a switch is made to operate.	£47.50	Deron

NAME	DETAILS	PRICE	SUPPLIER
Standard Power Transmitter	Remote control with a range of 10m. Operated by light pressure on a 12mm button. Tactile feedback. A Switch-a-Switch device for use with environmental control units.	£15.26	Ridley Electronics
High Power Transmitter	Similar to the above, but with a range of 15m.	15.26	Ridley Electronics
Beach Ball and Ring	An air operated switch supplied with a colourful ball and swimming ring. The pressure required to operate it can be varied. For use with toys.	£38.50	Deron
Cushion Switch	A sensitive air operated switch. Requires light pressure on the pad. It has a pouch for fixing to a wheelchair etc.	£31.50	Deron
Air Operated Switch	For use with BBC computers (interface required). The pressure pad is 90cm in diameter. Requires 1100g force to be activated. It can also be mouth operated.	£6.99	Cleveland ITEC
Air Operated Switch	This is a blow switch activated by a 75mm diameter foot pad. Terminated with a 1/4" jack plug.		Magpie Systems
Adjustable Pressure Switch	Consists of a pressure pad connected to an adjustable pressure air switch. The adjustable sensitivity means that, for example a limb may be rested on the pad without accidentally operating the switch. Fitted with 1.5m cable and 1/4" jack plug.	£49.50	QED
Air Cushion Switch	Light pressure on the cushion activates the pneumatic switch. Adjustable sensitivity. Cushion diameter: 89 mm	(US) $40.95	Steven Kanor Inc.
Pressure Pad	A single, air operated switch: activated by pressing the soft topped pad. Two types are available: flat type pad and pill box type. A dual switch version of each version of each is also available.	P.O.A.	Possum Controls

NAME	DETAILS	PRICE	SUPPLIER
Squeeze Switch	Activated by the flow of air from bellows. There are two output jacks: one with normally open contacts, the other closed contacts. Types of bellows: small hand bulb, large hand bulb and a flat disk/pillow bulb.		Maddak Inc.
Air Switch Kits	Consists of a switch operated by squeezing a rubber bulb, a 9v battery operated motor with a 25mm shaft, and battery clips.		Maddak Inc.
Air Pressure Switch	A pneumatic momentary action switch operated by pressing the plastic pad. For use with BBC computers.	£25	Speech & Language Group
Dual Purpose Air Pressure Switch	A pneumatically operated, momentary action switch, controlled by pressing the plastic pad. It is fitted with a 'D' connector and a 2.5mm jack plug, allowing it to be used with a BBC computer or other device (eg cassette recorders).	£27.50	Speech & Language Group
3 Knob Switch Box	A wooden box with 3 easily depressed knobs. For use with BBC computers (interface required)	£31.90	Toys for the Handicapped
Four Knob Switch Box	Similar to the above but with 4 knobs. Fitted with 1/4" jack plugs.	£46.90	Toys for the Handicapped
Sponge Nurse Call Switch	A cloth covered single switch. Any slight movement may activate the switch. A 305mm cord is supplied, fitted with a phone jack plug.		Dickey Eng.
Single Push Panel	A plexiglass panel mounted on a wooden base. The switch is activated by pushing the panel.		Handicapped Child's Technol. Services
Double Push Panel	Similar to the above but with two plexiglass panels. An audible click is given on switch activation.		Handicapped Child's Technol. Services
Large Button Switch	A large colourful button housed on a plastic case. Momentary action, very robust. Audible feedback. Requires 300g force to activate.	£19.50	Deron

NAME	DETAILS	PRICE	SUPPLIER
Large Double Button Switch	Similar to the above, but two buttons.	£25.50	Deron
Four-Way Large Button Switch	Four pads of 50mm diameter, numbered 1-4, each a different colour. Provides four functions. Audible feedback.	£39	Deron
Button Switch	A small wafer with a pushbutton on it. Light pressure activates a single switch.		Medical Equipment Distributors Inc.
Giant Button Switch	This can be operated by the palm or foot. It is a 40mm diameter mushroom-shaped button. Requires 250g force to activate.	£10	Clatterway
Button Switch	This resembles a doorbell button. Light pressure is required.	(US) $20.95	Steven Kanor Inc.
Large Area Pad Switch	Designed for rolling or jumping on - requires 10Kg force to activate. Size: 760 x 550mm.	£9.50	Bradford Activity Toys
Thumb Switch	Four small pads situated for operation by the side of the thumb. Requires 150g force to activate. Left and right hand models available. Connects to the BBC user port.	£3.22	Cleveland ITEC
Click Switch	The switch is 65mm square, mounted on a wooden base. Similar to a wall light switch-toggle one way for on and the other way for off. Feedback - positive click.	£6.65	Brilliant Computing
Danavox Switch	Robust dual switch requiring hard hand/foot pressure to operate. Single switch version also available.	P.O.A.	Possum Controls
Plate	A low profile single membrane switch operated by pressing coloured area. Size: 89mm operating force: 50g.		Aremco
Round Pad	A single switch operated by pressing the top surface. Pad diameter: 89mm. Operating force: 180g. Provides both auditory and tactile feedback.		Aremco

NAME	DETAILS	PRICE	SUPPLIER
Square Pad	A large single switch requiring 100g force to operate. Provides both auditory and tactile feedback. Size: 108mm square.		Aremco
Pillow	A single switch operated by pressing the top foam surface. A pin and velcro strip are provided for securing to a pillow, clothing etc. Provides both auditory and tactile feedback. Size: 83mm diameter. Operating force: 180g.		Aremco
Soft	A single switch with a soft surface inside a removable velvet bag. Operating force: 800g. Auditory feedback.		Aremco
Platform	A 63mm diameter button housed in a 108mm square platform. Operating force: 100g. Tactile and auditory feedback.		Aremco
Plate Switch	A single switch, activated by gently pressing the plate. Size: 76 x 127mm 127 x 203mm 203 x 330mm Fitted with a 3.5 or 7mm jack plug.	(US) $16.95 $19.95 $23.95	Steven Kanor Inc.
Plate Switch on Stand	The smallest version of the above, mounted on a 305mm gooseneck and base.	$35.95	Steven Kanor Inc.
Mirror Plate Switch	The 127x203mm version of the Kanor plate switch with an unbreakable mirror mounted on the surface.	$21.95	Steven Kanor Inc.
Computer Plate Switch	The 127x203mm plate switch with a picture of a keyboard mounted on the surface.		Steven Kanor Inc.
Vibrating Plate Switch	A 127x203mm single switch which vibrates when activated.	$35.95	Steven Kanor Inc.
Lighted Plate Switch	A 127x203mm single switch which illuminates when activated.	$35.95	Steven Kanor Inc.

NAME	DETAILS	PRICE	SUPPLIER
Musical Plate Switch	A 127x203mm single switch which plays a tune when activated - either in isolation, or in conjunction with a toy or other device.	$35.95	Steven Kanor Inc.
Penta Switch	This is a set of 5 small button switches fitted in a disk-shaped housing. Made by TASH.	P.O.A.	Aremco
Lighted Musical Switch	Similar to the musical plate switch, six red lights flash along with the music when activated.	(US) $35.95	Steven Kanor Inc.
Vertical Plate Switch	This single switch is provided with suction cups, screws and mounting tape for postioning in the vertical or at 45°. Plate diameter: 102mm	$35.95	Steven Kanor Inc.
Intention Switch	This single switch requires light pressure to be applied for an adjustable pre-set time (between 1-30 secs) before it will activate. Size: 127x203mm.	$45.95	Steven Kanor Inc.
Computer Keyboard Switch	A single switch in the form of a keyboard. Pressing any key activates the switch. Fitted with a 3.5 or 7mm jack plug.	$70.95	Steven Kanor Inc.
Switch 100	This is a momentary touch switch which reacts to light pressure (20-30g). Diameter: 127mm. Terminated with a 1/8" phone jack.	$29.95	Ablenet
Wafer Switch	Made by TASH, this consists of 5 membrane switches in one low profile housing. The pressure plates are 60mm in diameter and have directional cursor control markings.	P.O.A.	Aremco
Tube Switch	The switch is built into a cylinder shaped housing which has a push button at one end. It can be held in the hands, under the arms etc. Fitted with a 0.25" jack plug.	£19.50	Deron

TILT SWITCHES

Mercury tilt switches may be attached to various parts of the body. Activation requires a small amount of movement to move the mercury in its chamber - making or breaking the contacts.

NAME	DETAILS	PRICE	SUPPLIER
Tilt Switch	This tilt switch is supplied with 2m flex. Terminated with a 0.25" jack plug.	£8	Magpie Systems
Tilt Switch	Supplied with a velcro strap.	£10	Ketteridge, P&K
Head Operated Tilt Switch	Mounted on a velcro-fastening, adjustable head band.	£16	Deron
Mercury Tilt Switch	The tilt switch is cylinder shaped. Weight 25g, length 40mm, diameter 13mm.	£11.95	QED
Tilt 45 Switch	Operates within a 45° range of movement. Size: 45 x 15mm.	£6	MARDIS
Tilt-O Switch	Similar the the above, but switches anywhere within a 180° arc.		MARDIS
Tilt Switch	This single switch is activates when tilted beyond an adjustable pre-set angle. Velcro strap included. Fitted with a 3.5 or 7mm jack plug.	(US) $18.95	Steven Kanor Inc.
Tilt Sensors	A range of tilt sensitive control switches. Each operates at a defined tilt in a prescribed direction, e.g. head droop control, sideways tilt.	P.O.A.	Queenwood Scientific
Mercury	The mercury chamber is housed in a small box - small enough to be worn on a wrist band for example. For use with battery toys and other devices.	£17.80	Toys for the Handicapped
Tip Switch	A mercury switch with a smooth surface for mounting. Activated by tilting down 5° from the horizontal. Made by TASH.	P.O.A.	Aremco

NAME	DETAILS	PRICE	SUPPLIER
Tilt Switch	This switch has a mercury-filled level, which, when tilted, activates the switch.		Handicapped Child's Technol. Services
Mercury Tilt Switch	Activated by change in position, comes with a strap for securing to the wrist, arm etc.		Luminaud Inc.

DERON HEAD OPERATED TILT SWITCH (& SUCKBLOW SWITCH)

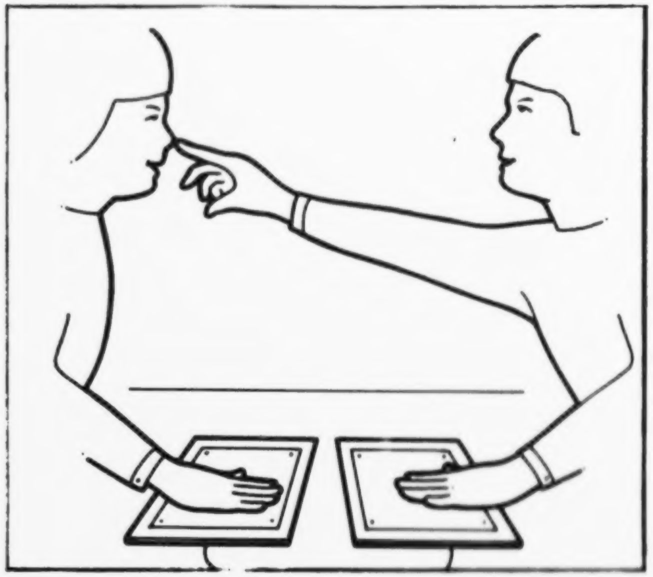
TOUCH & PROXIMITY SWITCHES

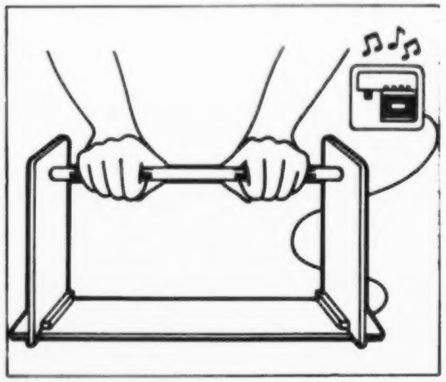
This section includes switches that are activated by skin contact and switches that react to the presence of a magnetic field.

NAME	DETAILS	PRICE	SUPPLIER
Touch Pad System	A set of 4 touch sensitive pads, mounting board and control box. Adjustable sensitivity. Feedback: indicator light.	£67	MARDIS
Touch Switch	Two slightly separated metal plates that must bridged by a finger for the switch to be activated. Fitted with two screw terminals.	£5.70	Cleveland ITEC
Reed Switch	The switch is housed in a small, lightweight wooden box and is activated by the close approach of a small magnet (supplied).	£7	Magpie Systems
Magnetic Finger Switch	A sleeve containing a magnet fits on the finger, a small movement of the finger towards the switch unit activates it.		Luminaud Inc.
Wolfson Touch Switch	A flat magnetic plate connected to an electronics box. The switch is activated by touching the plate and remains on as long as contact is maintained. Available for BBC user or analogue port.	£39	QED
	Battery powered version	£49	
Single Magnetic Switch	Activated by approaching the switchpad with a hand-held magnet.	£10	Tech Toys
Double Touch Switch	Two metal plates will operate a toy or other device when they are touched simultaneously, either by one child or by a number of children linking hands. Used on its own, it functions as a music box upon switch operation. Plate size: 102 x 152mm each.	(US) $20.95	Steven Kanor Inc.
Battery Operated Touch Pad	A single touch pad, measuring 155 x 90mm. Activated by the slightest touch.	£32.50	Deron

NAME	DETAILS	PRICE	SUPPLIER
Touch Pad	As above, but only for use with Deron environmental control unit (e.c.u.).	£35.40	Deron
Double Touch Pad	Similar to the above (e.c.u. only), but with two pads, measuring 125 x 95mm each.	£46.80	Deron
Touch and Go	Two large conductive pads attached to a control box. Terminated with a 0.25" jack plug for connection to a toy. The toy (not included) works when the pads are touched simultaneously by one person, or more than one if they link hands.	£29.50	Deron
Touch Switch	A small sensor for fingertip activation.	£35	Ketteridge, P&K
Proximity Switch	This will react to merely brushing against it. Adjustable sensitivity. Feedback: indicator light. For use with BBC computers.	£33.95	Syndicate Software
Double Proximity Switch	Similar to the above, but with two touch pads. Connects to the amalogue port of BBC computers.	£65.95	Syndicate Software
Touch Sensitive Switch	Activated by touching the metal plate (100 x 150mm) which is housed on a plastic box. Terminated with a 0.25" jack plug.	£40	QED
Capacitive Touchplate Interface	This has five capacitive touch plate channels, activated by skin contact. Three versions are available with different switch positions and sizes. It can be used to control communication aids and wheelchairs.		Hugh Macmillan Medical Centre
Touch Switch	A dual switch with two 76mm square contacts. For use with computers and other devices via a suitable interface. Operates by surface contact - sensitivity adjustable.	£78	Telemachus Ltd.
	Single touch switch	£50	
Touch Disc	A 51mm diameter touch sensitive disc and control box. For mains use only, lower voltage versions on request.	£62.75	Telemachus Ltd.

NAME	DETAILS	PRICE	SUPPLIER
Flexitouch	As above, but mounted on a flexible assembly and stand.	£58.50	Telemachus Ltd.
	Flexitouch with clip instead of stand	£68.50	
Touch Sensitive Switch	Activated by the slightest touch. Adjustable sensitivity.	P.O.A.	Possum Controls
Electronic Switch Transmitter	A remote control activated by skin contact with two 2mm contacts. A Switch-a-Switch environmental control device.	£15.26	Ridley Electronic
Grip Touch and Go	Two conductive pads built into a horizontal bar. The bar must be gripped by both hands simultaneously to activate the switch. Fitted with a 0.25" jack plug.	£44.90	Deron





DERON TOUCH & GO AND GRIP TOUCH & GO

330

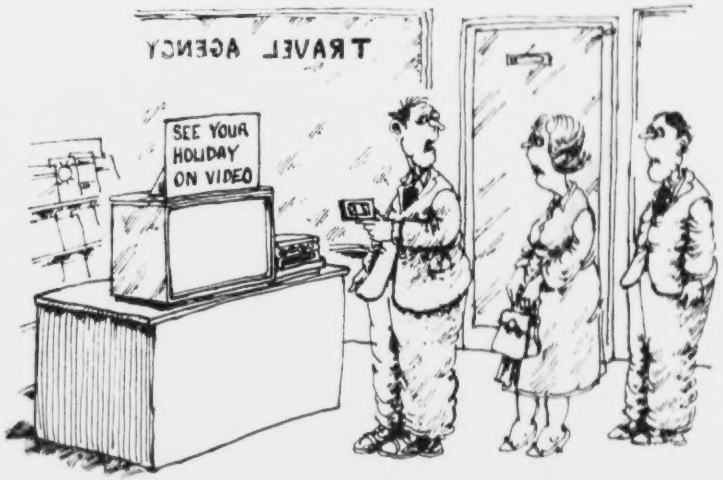
332

WOBBLE STICKS

A wobble stick is a switch connected to a spiral spring assembly, deflection of the spring operates the switch.

NAME	DETAILS	PRICE	SUPPLIER
Wobble Switch	Made by Prentke Romich, this switch has a padded head mounted on a gooseneck. Deflection in any direction operates the switch. Supplied with a clamp for mounting.	£65	Liberator
Wobble Stick	A 10cm spring mounted on a board with rubber feet. Requires 50g force to activate. Auditory feedback.	£42.50	Teleswitch
Wobble Switch	Deflection in any direction activates this switch. Fitted with a 0.25" jack plug.	£20	Ketteridge, P&K
Wobble Switch	When the lever is hit by a swiping action or other gross movement, the switch is activated. Mounted with a spring lever on a 305mm gooseneck and base. Fitted with a 3.5 or 7mm jack plug.	(US) $65.95	Steven Kanor Inc.
Vertical Wobble Switch	The lever is vertically mounted. The switch comes with suction cups, screws and tape for positioning. Fitted with a 3.5 or 7mm plug.	$40.95	Steven Kanor Inc.
Spiral Wobblestick	Vertically mounted on a wooden base, the switch is activated by any deflection from the vertical. Single or multiple input available.	£40	Telemachus Ltd.
Wobblesticks	Two switches operated by deflection in any direction. The sticks have ball-shaped tops and can be positioned anywhere on the board supplied. Single switch version available.	P.O.A.	Possum Controls
Springsticks	Similar to the above, but with increased stick length. The switches are sprung along their length. Single switch version available.	P.O.A.	Possum Controls

NAME	DETAILS	PRICE	SUPPLIER
Spring Switch Transmitter	A remote control for Switch-a-Switch equipment. Length 100mm, diameter 8mm. Deflection in any direction operates the transmitter. 300 and 500mm goosenecks are available for mounting.	£12.27	Ridley Electronics Ltd.


TRAVEL AGENCY
SEE YOUR HOLIDAY ON VIDEO

'I'm afraid the video of your hotel isn't finished yet, we'll have to transfer you to another cassette.'

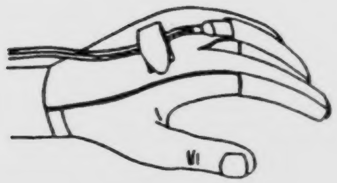
SPECIFIC TRAINING SWITCHES

These are designed to encourage specific motor skills and/or provide a learning task.

NAME	DETAILS	PRICE	SUPPLIER
Slide Knob Switch	Constructed in wood, designed to encourage elbow and shoulder movement. Works with toys (and computers - interface required).	£26.40	Deron
Twist Door Knob	To encourage grip and wrist rotation. Made in wood. Works with toys (and computers - interface required).	£25.60	Deron
Telephone Dial	A centrally positioned dial housed in a wooden box. Switch operated by dialling a number.	£20.80	Deron
Double Pull Handle	A wooden box with two vertical pull handles. Single switch designed to encourage bilateral movement in both arms. Works with toys etc.	£31.20	Deron
Slide Switch	This has a track to guide arm movement. An interface is required for computer input.	£11	A-2-B
Swivel Arm Switch	Designed to encourage forearm movement, this has two microswitches built-in and straps on. Adjustable sensitivity, weighs 250g.	£25	Computer Aids
Shape Switch	A single switch activated when the coloured wooden shape is correctly positioned in the puzzle. Fitted with a 3.5 or 7mm jack plug.	(US)	Steven Kanor Inc.
	1 shape (red)	$24.95	
	2 shapes (red, blue)	$29.95	
	3 shapes (red, blue and yellow)	$34.95	
Shape Switch Music Box	Similar to the above, when used alone mucic plays upon correctly inserting the piece(s).		Steven Kanor Inc.
	1 shape	$32.95	
	2 shapes	$37.95	
	3 shapes	$42.95	

NAME	DETAILS	PRICE	SUPPLIER
Stacking Ring Cone	This single switch comes with 5 coloured wooden rings of different sizes. Music plays or the connected device starts when the rings are correctly stacked on the peg.	(US) $40.95	Steven Kanor Inc.
Roller Switch Music Box	This switch has a wooden roller on a horizontal axis. Rotating the cylinder activates the switch. Acts as a music box when used alone. Suction cups, screws and tape are provided for mounting.	(US) $32.95	Steven Kanor Inc.
Barrel Switch	A horizontally mounted cylinder on a wooden base. Rotation of the cylinder triggers switch closure.		Handicapped Child's Technol. Services
Posture Sensor	A stretch sensor fitted on a length of elastic. The switch will change state with a change in elastic tension. Uses: postural development/rehabilitation.	P.O.A.	Queenwood Scientific
Ball on Loop	A Pethna switch, the wire loop has a small ball threaded on it which must be guided along the wire. For use with toys etc.	£26.40	Toys for the Handicapped
Screw Along	Wooden construction, the large washer can be threaded left or right along the bolt.	£43.10	Toys for the Handicapped
Four Peg Box	Wooden construction, four vertical pegs and corresponding holes.	£38.20	Toys for the Handicapped
Different Size Peg	Similar to the above, but with three pegs of different diameter and corresponding holes.	£36.50	Toys for the Handicapped
Sorting Box	Wooden construction, three different wooden shapes with corresponding holes.	£46	Toys for the Handicapped
Different Circles	Similar to the above, but with three circles of different diameter. Made by Pethna.	£46	Toys for the Handicapped
Ball in Hole	Wooden Box construction with a hole in the top for dropping a small ball in, and a hole at the bottom front to return it. A timer is required for this to function as a switch.	£47.50	Toys for the Handicapped

NAME	DETAILS	PRICE	SUPPLIER
Single Peg	Wooden construction, vertical peg and hole.	£25.60	Toys for the Handicapped
Circle	Similar to the Single Peg, but with a circular piece on a handle and a corresponding hole. Square and Triangle are also available.	£24.90	Toys for the Handicapped
Finger Flex Switch	The switch is built into a partial glove and is activated by bending fingers. Fitted with a 3.5mm mini-phone plug.		Luminaud Inc.



LUMINAUD FINGER FLEX SWITCH

SWITCH-COMPUTER INTERFACES

The majority of switches require an interface to allow them to be used as computer input devices. Enquiries concerning specific switch software should be addressed to BARDSOFT (see Appendices).

NAME	DETAILS	PRICE	SUPPLIER
A-2-B Interface	This connects to the BBC B user port and enables any A-2-B switch to be used as an input device.	£10	A-2-B
Access-1	This features two 0.25" jack sockets, two 3.5mm jack sockets and a 7 pin DIN socket. Standard versions are a available for use with BBC, Apple IIe & II+ computers, others on request. Version for connection to:		Interface Designs
	BBC analogue port	£16.40	
	BBC user port	£16.40	
	BBC analogue & user port	£20.40	
	Apple IIe/II+	£21	
Access-2	Similar to the above, but with the addition of a 15 pin DIN socket. This allows the use of I.D.'s 1 to 4-way joystick, the Micromike Telemachus' switches etc. Terminations:		Interface Designs
	BBC analogue port	£20.70	
	BBC user port	£20.70	
	BBC analogue & user port	£24.70	
	Apple IIe/II+	£25.30	
Access-3	Two sets of sockets, each with two 0.25" jack sockets and a 7 pin DIN socket. It also acts as an extension to the BBC user and analogue ports.	£37.40	Interface Designs
Access-4	A four relay toy control interface for BBC computers. It enables simultaneous control of upto 4 toys and/or toy functions from a variety of switch inputs. It has both analogue and user port connectors and can be used in conjunction with Acces-3. It also has a connector for concept keyboards.	£69.50	Interface Designs

NAME	DETAILS	PRICE	SUPPLIER
Analogue Port Adaptor	This interface connects to the analogue port of BBC computers and has six 0.25" jack plug sockets, allowing switch control of games etc.	£12.50	Cleveland ITEC
Analogue Port Adaptor	Fitted with two 0.25" jack sockets. Connects to the analogue port of BBC computers.	£10.50	QED
Apple Input Adaptor	Fitted with two 0.25" jack sockets and connects to the Apple II, II+, IIe & IIGS using a 16 pin connector. Special software is required for switch operation of an Apple, a list of such software is provided.	(US) $40.95	Steven Kanor Inc.
Apple Switch Box	Two sets of sockets, each with two mono and one stereo connector. There is also a 7-pin DIN socket and an extension for the Apple 9 pin port. Connects to the Apple joystick port.	£36	Electraid
BBC Computer Interface	Enables a switch terminated with a 0.25" jack plug to operate the cursor keys, replacing the joystick when playing games.	£20.50	Deron
Computer Interface	The "Gannicot Rig" is a hands-free remote two switch interface which connects to a computer via a 5-pin DIN port. Communication with the interface is via two infra red transmitters which are controlled by two lip contact switches. The switches are mounted on a pipe mouthpiece secured to a goosneck.	£214	Ridley Electronics
Computer Switch Interface	Allows single switch access to an Apple. It accepts up to two switches, using them in place of joystick firebuttons etc.	(US) $27.95	Ablenet
Game Port Adaptor	There are two models, one for the Apple II+ the other for the IIe. Plugs into the game port and allows both single and dual switch access.	$55	Arroyo and Associates Inc.

NAME	DETAILS	PRICE	SUPPLIER
Infra-Red Link	The transmitter can be controlled by connecting a switch to it. The switch presses are transmitted to the receiver, which is connected to the computer.	£95	Elfin Systems
Interface Box	For connection to the user port of BBC computers. It has four 0.25" jack sockets.	£15	Computer Aids
Interface Box	This offers four 0.25" jack sockets and connects to the BBC user port.	£23	Brilliant Computing
Macro Key Interface Box	Similar to the above.	£6.50	Cleveland ITEC
Micrex Interface	Similar to the above.	£26.60	Toys for the Handicapped
MRC Computer Switch Interface	Connects to the computer analogue port, allowing switch input. Available for BBC and Apple computers.	£45	Queenwood Scientific
Switch Adaptors	TASH manufacture adapters for either Apple IIe & II+ or IIc computers. The adapter connects to the game input and provides access for single, dual and multiple ability switches.		Aremco
Switch Connection Unit	Facilitates the connection of single or double switches to a BBC via the analogue port and to an Apple via the game port. It has two 7 pin DIN switch connectors.	£46	Specialised Switches
Switch Interface	Connects to the game port of Apple computers, adapting them for switch operation - single switch software required.	(US) $34.50	Don Johnston Inc.
Switch Interface	Made by Prentke Romich, this interface connects to the game port of the Apple IIc or IIe. Compatible software, other than special switch software, will be that which is normally run through the game port.		Liberator

NAME	DETAILS	PRICE	SUPPLIER
Universal Input Adaptor	Features: a joystick port, two 1/4" jack sockets and two 1/8" jack sockets. Connects to an Apple II+, IIe, IIc or IIGS using a 9 pin connector.	(US) $45.95	Steven Kanor Inc.

'And I bought this one to explain the manual of the first one.'

JOYSTICKS

NAME	DETAILS	PRICE	SUPPLIER
Lite Touch	A light activated joystick emulator. Four to eight sensors are attached to a computer monitor and the user wears an optical pointer. The four joystick directions are emulated by aiming the pointer at the first four sensors, the additional sensors act as the fire button. The receiver unit plugs into the computer joystick port. Two sensors may be used with PC AID as a dual input.		Lovejoy Electronics
1 to 4-Way Switched Joystick	This has a positive, self-centering action. Gate restrictors are provided. The base rim has drill holes for securing. Models are available for BBC (analogue or user port), Apple, Sinclair and Amstrad computers, others on request.	£40	Interface Designs
Touch Sensitive Joystick Control	A single, omni-directional touch-sensitive switch that can be triggered by any movement which moves the control away from the neutral position.		Handicapped Child's Technol. Services
PRC Joystick	Activated by pushing the handle in one of four directions, each direction controlling a different switch. When used with a scanning device diagonal scanning is possible. Made by Prentke Romich. Stick length 50mm. Requires 200g force to activate.	£140	Liberator
Paddle Switch	A replacement for hand-held game paddles - designed to give better control and bilateral movement exercise. It has two knob controls and two buttons. Plugs into the computer game port.		Psychological Software Services

NAME	DETAILS	PRICE	SUPPLIER
Beebstick Plus	Self-centering, the stick has a round knob on top and the fire button is housed on the casing. Requires 250g force to operate. Plugs into the analogue port of BBC computers.	£40	Clare's
Micrex Joystick	A fully proportional joystick for use with BBC computers - interface required.	£24	Micrex
Micro Joystick	A four position, very short stroke, ungated joystick switch. Pushing down on the shaft operates a fifth switch. The tip of the shaft is octagonally shaped. Made by TASH. Length 89mm, diameter 24mm. The joystick positions require 60g force, the push down switch requires 120g force.	P.O.A.	Aremco
Mini Joystick with Pneumatic	Made by TASH, designed for mouth control. A 4 position, short stroke ungated switch. The fifth switch is activated by puffing through the shaft. The shaft may be shortened. Length 152mm, diameter 38mm.	P.O.A.	Aremco
Mini Joystick with Push	Similar to the above, but with a flexible rubber shaft. Intended for chin or hand operation. Length 114mm, diameter 32mm. Requires 60g force in a joystick direction, and 120g for the push down switch.	P.O.A.	Aremco
Joystick with Pad Switch	A small, four position joystick mounted on a board alongside a pad switch. Pad diameter 64mm. Operating force 200g. For use with a TASH switch adaptor.	P.O.A.	Aremco
Joystick Assembly	This is supplied with a clamp for mounting and can be switched to 1 or 2-way operation.	£62	Telemachus Ltd.
Joystick Switch	This is a spring-loaded, self-centering joystick fitted with a 'D' connector for use with BBC computers. Momentary action.	£42	Speech and Language Group

NAME	DETAILS	PRICE	SUPPLIER
Joystick	A light action 4-way joystick with a large wooden door handle for a knob.	£34.50	Deron
Joystick	A light action, 2-way gated joystick. Stick length 60mm, fitted with a round knob. Operating force: 350g. Terminated with a 3.5mm mono jack plug - will work with any computer via a suitable interface box.	£30	Clatterway

DEPT OF SCIENCE AND TECHNOLOGY

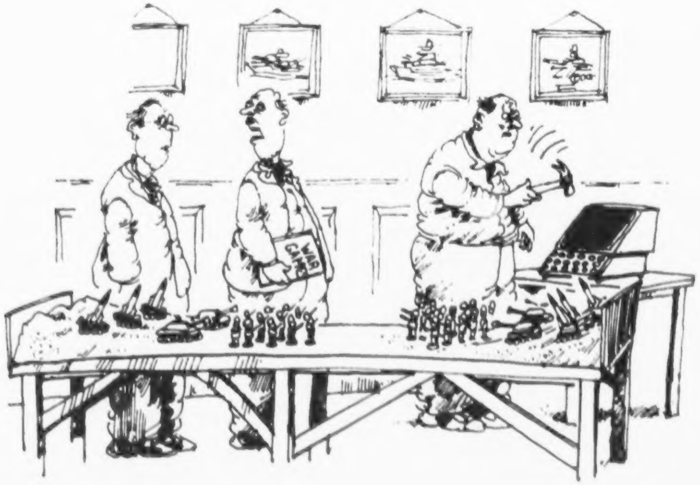
'Of course it'll take us a while to learn how to use it properly.'

SWITCH ADAPTORS

NAME	DETAILS	PRICE	SUPPLIER
Switch Filter	For use with equipment controlled by up to 4 switches. Provides compensation for: unintended multiple switch presses, premature release of a switch, holding a switch on too long, premature pressing of a switch after releasing another switch. All 4 functions may be turned on and off and their periods varied.		Elfin Systems
Latching Box	This box converts a single momemtary switch into a latching switch. It has one 0.25" jack socket and output from the box is from a lead fitted with 0.25"jack plug. The anti-tremor circuit disallows repeated actuations-only one switch press per second is recognised.	£25	QED
Latching Box with Timer	Similar to the above but with the addition of an adjustable timer. This gives control over the length of time a device will remain on for any given switch actuation. Timer range: 0-45 seconds.	£28.50	QED
7 Pin DIN Adaptor	This converts switch termination from a 7 pin DIN plug to a 0.25" jack plug.	£12	QED
Timer/Latcher	Similar to the QED latching box.	£36.50	Toys for the Handicapped
Latching Adaptor	Converts a momentary switch into a latching one-not suitable for switching mains.	£33.50	Deron
Latching Module	When connected between a switch and any toy or device this will alternately turn the device on or off with each switch closure.	(US) $42.95	Steven Kanor Inc.

NAME	DETAILS	PRICE	SUPPLIER
Timer Module	This connects between a switch and toy or other device, allowing the device to be switched on for a pre-set time (0-30 seconds).	(US) $42.95	Steven Kanor Inc.
Counter Module	The number of times a switch is activated can be recorded.	$52.95	Steven Kanor Inc.
"AND" Module	This module connects between two switches and a battery device. The switches must be activated simultaneously for the device to work.	$20.95	Steven Kanor Inc.
Inverter Module	The switch capability is reversed: releasing pressure from the switch activates it. This module is for use with battery devices.	(US) $22.95	Steven Kanor Inc.
Series Adaptor	The adaptor will turn a battery device on when two switches are activated simultaneously. It has two 1/8" phone jacks and one 1/8" phone plug.	$9.25	Ablenet
On/Off Timer Adaptor	The adaptor converts the function of a switch from momentary to latching. A toy or cassette player can be made to work for a set time (1-45 seconds) or with no time unit. Fitted with a 0.25" jack socket and a 0.25" jack plug.	£23	Lecta
Battery Device Timer	A battery operated device can be run from 2 to 40 seconds after a switch is activated. Compatible with 0.5" connectors. A 9V battery is required.	(US) 34.95	Ablenet
Battery Device Adaptor	Allows switch control of battery powered devices. Only two sizes are needed: AA for small battery compartments and C-D for larger compartments. The adaptor accepts a 1/8" phone plug.	$5.25	Ablenet
Battery Toy Adaptors	The adaptors allow switch operation of battery powered toys be connecting between the 0.25" jack plug of the switch and the battery compartment of the toy.	£2.50	QED

NAME	DETAILS	PRICE	SUPPLIER
Battery Adaptor	Similar to the above, the toy remains switched on, and is controlled using the external switch.	£1.50	Brilliant Computing
Toy Control Adaptor	The lead connects between a battery device and the cassette port of a BBC computer, allowing a reward to be given for completing a computer task (micromate software required).	£2.90	Toys for the Handicapped
Battery Switch Lead	This connects a battery toy to a switch, giving switch control of the toy.	£2.90	Toys for the Handicapped
9V Battery Adaptor	The 9V battery required for a toy is placed in the adaptor module, leaving the battery compartment of the toy free to accept a simple snap connector.	(US) $12.95	Steven Kanor Inc.



'He's trying to get the computer to malfunction, so we can start the war.'

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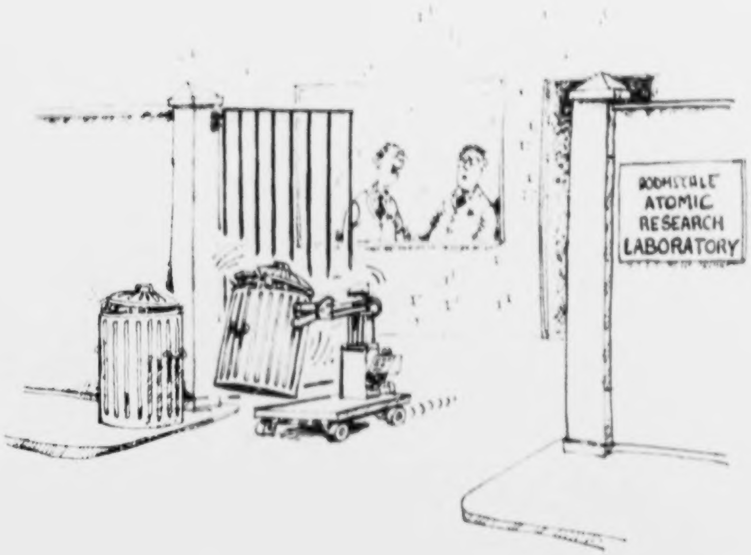
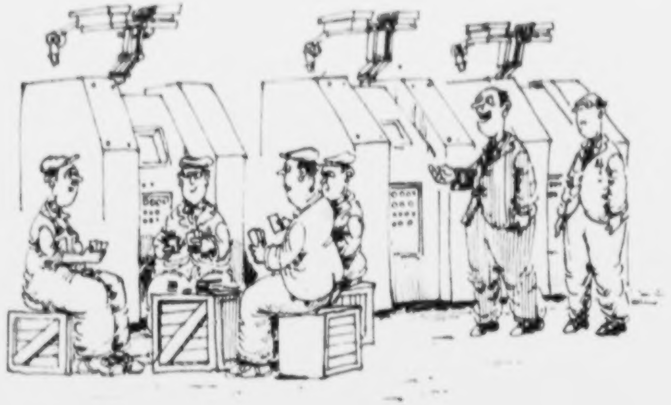


'Thanks to computers we don't have to manhandle radioactive waste at all now.'



'With this new computerised machinery we can have more of our men playing cards than ever before.'

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Initially funded by the Department of Trade and Industry and then by the Department of Health and Social Security B.A.R.D. contains descriptions of current design and development projects, one-offs, prototypes, also research into the use of aids, surveys and evaluations. We can provide information in two ways: (a) By undertaking a special search on request, for example, design for specific disabilities, microelectronic applications, input devices or work taking place in a particular region. (b) By supplying a series of loose-bound reports printed out under thirteen main subject areas. Charge is 10 pence per A4 printout.

BARDSOFT -Database on Software for Special Needs

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Jim Sandhu, Debra Paget, Doreen Pallister

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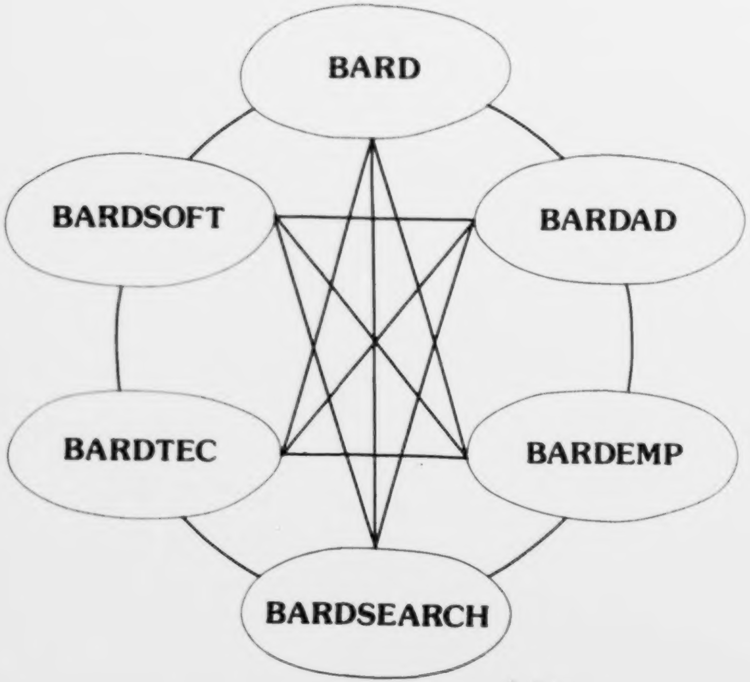
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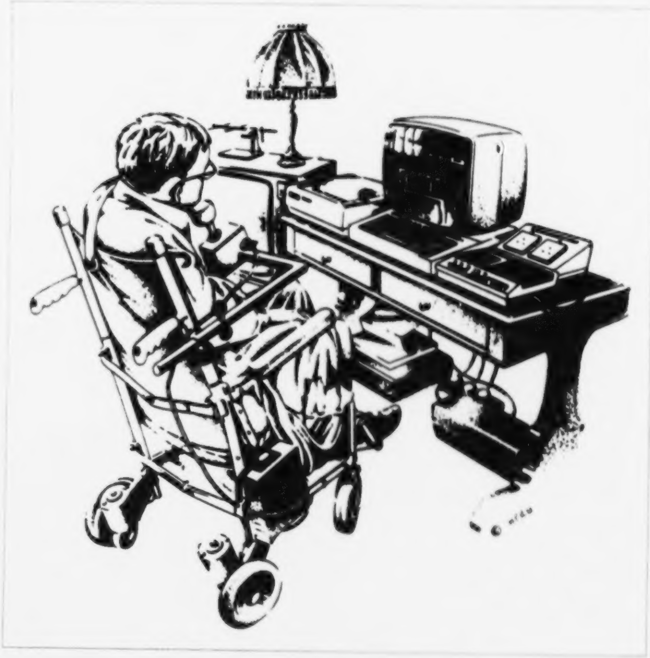

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